REPORT

OF THE

DIRECTOR GENERAL
OF PUBLIC HEALTH

FOR 1971

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1972–73

PARLIAMENT OF NEW SOUTH WALES

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DEPARTMENT OF PUBLIC HEALTH, NEW SOUTH WALES

Office of the Director General of Public Health
9-13 Young Street, Sydney

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(As at 31st December, 1971)

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The following Divisions and Branches are controlled by the Director General of Public Health: Maternal and Child Health; Maternal and Perinatal Studies; Tuberculosis; Epidemiology; Dental Services; Occupational Health; Forensic Medicine; Analytical Laboratories (Government Analyst); Medical Officers of Health for the Metropolitan, Western Metropolitan, Newcastle, South Coast, Western, North Western, North Coast, Riverina and Broken Hill Districts; Institute of Clinical Pathology and Medical Research; Health Education; Pure Food; Health Inspection; Private Hospitals; Poisons Branch; Police Medical; In-Service Training Course for Community Health Nurses.

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Report of the Director General of Public Health

TO

The Honourable The Minister for Health

(The Hon. A. H. JAGO, M.L.A.)

Sir:

"*And may there be no sadness of farewell*"

In presenting my annual report for the year 1971 I am not pervaded by Tennyson's optimism as I append my signature to what will be the last report of the Director General of Public Health.

Come January 1st, 1973*, all separate strands of health administration in the Government sector will lose their identities and be absorbed into the Health Commission of New South Wales. There will be no identification of persons as members of the Commission other than by a prosaic description of the areas in which they will exercise their executive responsibilities. In this utilitarian concept there is no place for honourable and traditional titles, not even thereafter as anachronistic symbols. So, likewise, is there no place for reporting of achievements and events which might identify individual leadership and gloss the Commission's corporate image.

Time and change are inevitable. The history of health services in New South Wales is studded with epochs of change, occasionally resolved by compromise, but more generally swift, dramatic and tumultuous. My regret is that history will remember me, not by my leadership or achievements, but as the last of a long line of distinguished forebears, who, in the foundling days of the Colony, contributed as much to its social and economic progress as they did to the development of its health services.

I am proud, yet humble, to be included in this lineage, and for 14 years to occupy the oldest office in the Public Service of Australia. It was Surgeon General John White, the first of the line, who received his commission on the 24th October, 1786—some 15 months before the Colony was settled. His was a civil commission from George III, who firmly stated therein White's appointment as head of the Colonial Medical Service, responsible to Phillip as Governor of the Colony, and not as commander-in-chief of its military forces . . . "We (i.e., George III) do, by these presents, constitute and appoint you to the Surgeon to the Settlement within our Territory called New South Wales."

Poor White, bedevilled by his antagonistic colleague William Balmain, constantly beset by almost insuperable difficulties of impending famines, shortage of supplies, inadequate support and a quarrelsome medical staff, never accustomed himself to a continuing career so far from the England for which he yearned, and to which he returned in 1795. His equanimity and judgment was too frequently impaired by the stresses and brutality of the settlement and animosity and jealousy between himself and his staff. Yet, in less troubled times he saw the vision of a great land, and sought suppression from the publication of his *Journal* "many remarks not very favourable to the settlement, as I now trust from change of Men (I mean Governors) measures will be pursued that will soon make it in a great degree independant of the Mother country".

William Balmain's ambition was achieved when he succeeded White as Principal Surgeon. He was an able administrator, ruthless and truculent, quick to give and take offence, even to accepting the collective challenge of the officers of the New South Wales Corps to a duel on a one-after-another arrangement (which perhaps fortunately for Balmain did not eventuate). That he was competent both as Principal Surgeon and magistrate was testified by Governor Hunter. His excursion with D'Arcy Wentworth in the rum scandal was but a profitable extension of his providoring commercial activities.

He, in turn, was succeeded in 1804 by Thomas Jamison who was professionally the best qualified of the surgeons then in the Colonial Medical Service. His was a career of paradoxes: the first half quiet, unassuming and placid; the second equally as turbulent in his association with his fellow surgeons Mileham and D'Arcy Wentworth in the deposition of Governor Bligh. To him is attributed the first medical publication in the Colony in 1804—"*General Observations on the Smallpox*."

The most flamboyant of the Principal Surgeons undoubtedly was D'Arcy Wentworth. His professional qualifications were very doubtful and his expertize meagre, but fortunately for the Medical Service he was so involved in local politics and commerce that the superintendence of the General Hospital and the Medical Service was left in the hands of his subordinates. He enjoyed Macquarie's friendship, who condoned his participation in the contract for the General Hospital as an unusual means to achieve a worthy objective. His reputation in medical administration was scathingly dismissed by Commissioner Bigge as "little deserving of censure or praise".

* This has now been extended to 1st April, 1973

Wentworth's successor was James Bowman—an able clinician, and equally dedicated and skilled as an administrator. He was a conscientious public servant, aloof from politics and local movements, respected by his colleagues and enjoying the confidence of successive Governors. By dogged persistence and without offence he initiated reforms to weld the medical facilities of the Colony into an integrated hospital system, catering for convicts, members of the military forces and paupers. His reforms were acknowledged in his change of title from Principal Surgeon to Inspector of Colonial Hospitals. His name is remembered to the present day as the progenitor of a famous pastoral family. He married Macarthur's daughter, who brought to the union a substantial dowry in land and stock.

Bowman did not deserve the treatment metered out to him as an aftermath of the drastic reorganization of the Medical Service in 1836, after which he was supplanted by John Vaughan Thompson, although allowed to draw his salary for 2 years in lieu of superannuation. Official motivation behind the abrupt reorganization at this period is not clear, although undoubtedly economics was a substantial factor. During this epoch official policy was to hold the *status quo* of the Colonial Medical Service despite an expanding population, with a continuing and strict financial scrutiny over its expenditure and activities.

John Vaughan Thompson was the agent of change, authoritarian, autocratic, egotistic, imbued with military discipline which he distributed largely on his unfortunate fellow-surgeons. His was a military title, Deputy Inspector General of Hospitals, and he acted well the part, brooking no interference from the Governor or his military superiors. No wonder he aroused antagonism from the colonial surgeons, who retaliated with tactics of passive resistance as the additional duties imposed on them interfered with their lucrative private practices or avocations as agriculturists. In all he was victor, even over Mitchell, who he set out to displace from the General Hospital by a series of cunning manoeuvres, planned with assurance amounting to arrogance. So bitter was the opposition he aroused, that Sir James McGrigor, Director General of Army Hospitals, had no option but to depose him in 1844. William Dawson was appointed to his post.

To Dawson was given the melancholy task of organizing the transfer of the colonial hospitals to civil control, as the demand on them as convict institutions rapidly diminished after transportation ceased in 1841. And so the Colonial Medical Service almost disappeared as it lost its institutions until of staff only Patrick Hill and Dawson remained. Dawson elected to continue his military career and transfer to Van Dieman's Land leaving Patrick Hill to succeed him as head of the remnants of the service, in the new position of Adviser to the Government on medical matters, Inspector and Consultant Physician to the Lunatic Asylum. His position was largely that of Chief Medical Officer to the Government responsible to the Colonial Secretary for his advisory and inspectorial duties and later in 1852 for the superintendence of the Parramatta Asylum. Hill died in 1852 and was succeeded by Bartholomew O'Brien, who served as "Advisor to the Government, Superintendent of the Parramatta Asylum and Head of the Government Service", until 1856.

After self government, bereft of its institutions and facing competition from the vigorous and expanding lunacy services, the viability of the Medical Service was tenuous and its content meagre, consisting of Government Medical Officer services; limited inspectorial responsibilities in the lunatic asylums, and other minor medical functions.

And so until 1896 the post of Adviser to the Government (usually referred to as Medical Advisor) was a personal appointment, sometimes combined with a permanent position in a branch of the Civil Service, and on other occasions conferred on a prominent member of the medical profession. Each of its occupants during this period enhanced its status by their prominence in educational, professional and social movements reflecting an increasing maturity and confidence in the political and social systems of the State.

The medical profession was heavily involved in the early development of the Sydney University in its aspirations to establish a medical school independent of Great Britain. Its first registrar was Richard Greenup, M.D., who was also a member of the Medical Board. The Medical Service was fortunate to attract him as Superintendent of the Parramatta Asylum and Medical Advisor to succeed O'Brien in 1856. He was a kindly and able administrator, who introduced many reforms and enlightened therapy in his conduct of the Asylum. His end was tragic and undeserved when in 1866 he was killed by one of the inmates.

Edward Samuel Bedford held the post of Medical Adviser until 1875. He was one of the first medical students from the Colony and was apprenticed in 1822, at the age of 16, to the Senior Colonial Surgeon of Hobart, James Scott. After completing his qualifications in London, he was appointed Assistant Colonial Surgeon to Van Diemen's Land's medical service (then a separate service to New South Wales). He became a prominent medical practitioner in Hobart, established St Mary's Hospital, in association with which he later provided the first medical school in Australia (recognized by English authorities for preliminary training). He moved to Sydney for greater opportunity where he became honorary surgeon to the Sydney Infirmary and helped to found Prince Alfred Hospital.

Under H. G. Alleyne the position of Medical Adviser again became a full-time post, combined with the quarantine service in which he was Health Officer of Port Jackson and Medical Superintendent for Immigration. He was associated with the Sydney Infirmary as Honorary Physician, and is honoured as the first doctor to introduce chloroform as an anaesthetic in New South Wales shortly after his arrival in the Colony.

One of the most distinguished physicians and citizens of the State, Sir Charles Kinnaird MacKellar, succeeded Alleyne as Medical Adviser from 1882–85, during which period he was also President of the Board of Health, then recently created. As a member of the Legislative Council he was a notable worker for child welfare in New South Wales, and was responsible for important reforms in the care of neglected and delinquent children. Equally as significant in his dual roles of Medical Adviser and President of the Board of Health he influenced the establishment of the Coast Hospital and the Sydney Quarantine Station.

Historically, reorganization of government medical services is conditioned by crisis and expediency, with expansion and rational planning following, later riding the crest of political priority and support. And so the year 1881 was a significant date in the renaissance of the Medical Service of New South Wales, initiating an epoch of development and direction which persisted for almost 70 years. In this year the State was faced with impending disaster from a major smallpox epidemic. Lacking organized medical resources, and faced with public panic, the Government created a Board of Advice to advise it on emergency measures necessary to contain and combat this threat to the security of the State.

So successful was the Board of Advice as an administrative agent that it was consolidated into a statutory Board of Health, to which in successive legislation, culminating in the Public Health Act of 1896, executive statutory powers were granted to administer health legislation. The position of President of the Board of Health became dominant, and that of Medical Advisor equivalent to the professional chief executive officer of the organization created to service the Board of Health in its administration. From 1886, when MacKellar relinquished the dual appointments of President of the Board of Health and Medical Adviser, the latter reverted to Ashburton Thompson (of whom later) as professional head of the Medical Service.

The prestige of the Board of Health was assured after its foundation by the calibre and public renown of early presidents commencing with MacKellar (1882–85); Sir H. N. MacLaurin (1885–89), Chancellor of the University and father-figure in political, commercial and professional circles; F. Norton Manning (1889–92), the most distinguished psychiatric administrator of his time in Australia, and equally respected outside Australia; and T. P. Anderson Stuart (1893–96), who enhanced the educational reputation of the Medical School of Sydney University as its Professor of Anatomy and Physiology, and whose first letter of reference for this academic appointment was from Lord Lister with commendation rare from this taciturn Englishman.

Equally the year 1896 is one of the most important dates in the chronology of medical administration in Australia when Ashburton Thompson was appointed President of the Board of Health at the instance of the Public Service Board. And thus a health commission was created with the Chief Executive Officer of the Medical Service being also in the role of managing director of its executive board. The proud tradition of this association between civil service and community executive management has persisted until the present.

Ashburton Thompson is still revered as the doyen of public health administrators of Australia. He was the first qualified public health practitioner to be appointed to the Government Medical Service. Born in 1848, he pursued his profession in London where he achieved early recognition for his publications in public health epidemiology. He arrived in Sydney in 1884, and after a period of temporary service during which he organized control measures against the smallpox outbreak of that year, he was appointed Chief Medical Inspector of the Board of Health and Deputy Medical Adviser in 1885, subsequently succeeding MacKellar as Medical Adviser in 1886.

In 1896 this title was changed to that of Chief Medical Officer to the Government, more aptly to describe Ashburton Thompson's status as head of the Medical Service in his combined management of activities of the Board of Health responsible to the Treasury and other medical services responsible to the Chief Secretary's Department.

He was a gifted administrator, endowed with natural leadership, who foresaw clearly the medical needs of the State and the methods whereby they would be met. His first task was to organize on behalf of the Board of Health the administration of public health based on statutory responsibilities. He was co-author with Berbard Wise, Q.C., of the first Public Health Act; sole draftsman of public health legislation to control leprosy; hygiene of dairies and noxious trades; innovator of pure food laws on a system of uniformity between the States, and uniquely later as Royal Commissioner for each State to advise on methods of enforcement. His sanitary surveys of this period, e.g., of Broken Hill, are classics of their type—lucid, thorough and precise, and still valid as source documents to social historians.

Had he rested on his administrative achievements, this would have been fame enough. His professional achievements in epidemiological research were equally as prestigous and were to win him worldwide renown.

He was recognized for his studies in leprosy, published as appendices to his annual reports; by the prize awarded by the National Leprosy Fund, and an invitation to Molokai to record the history of leprosy in the Hawaii Islands.

Undoubtedly his greatest achievement was his study of the plague epidemics of 1900 and 1901. He demonstrated for the first time that epidemics of plague were caused by plague in rats and not by direct human transmission. This discovery from the antipodes was received with surprise and acclaim. He was invited to address the American Medical Association; to perform the same function at the International Congress of Hygiene in Berlin, and again at a special meeting of the Royal Society of Medicine in London in 1907.

And so once again the medical services were an integral and vigorous component of the civil service, flourishing and expanding under Ashburton Thompson's leadership and authority. He retired in 1913 to London where he died in 1915, assured of an acknowledged right to a leading place in the role of benefactors to humanity.

In 1913 opportunity was afforded to reorganize the Department of Public Health of the Chief Secretary's Department by the creation of a separate Ministry of Health and the simultaneous retirement of Ashburton Thompson and Dr Frank Tidswell, then Chief Microbiologist of the Bureau of Microbiology. The latter service was reattached to the Department of Public Health to which also was transferred the Metropolitan Charities and Hospitals Department controlling State Hospitals and Asylums. Robert Thomson Paton was the medical administrator of the latter Department. He was appointed head of the reconstructed Department of Public Health, with the designation of Director General of Public Health.

Paton had behind him also a quarter of a century of meritorious Government service, since he was first appointed as resident surgeon to the Trial Bay Prison in 1887. He was well-qualified for this, and his subsequent forensic appointment as Government Medical Officer and Visiting Surgeon to the Darlinghurst Gaol from 1890 to 1908. A graduate of Edinburgh University he was a Fellow both of the Royal College of Surgeons and the Royal Institute of Public Health, and M.D., Brussells.

In 1909 he was transferred from the Health Department to the Charitable Institutions Division of the Chief Secretary's Department to supervise State Hospitals and Asylums and designated Medical Inspector of Charities. In 1912 his authority was extended to Metropolitan Hospitals, and his title altered to Inspector General of Metropolitan Hospitals and Charities—a title which somewhat modified is still retained by myself.

Paton served in difficult circumstances when recruitment of professional staff was impeded by the priorities of the Armed Services during World War I, and when much of such resources as he had was diverted to support of military camps and institutions. Despite these demands he organized successfully against the last major smallpox epidemic from 1913 to 1919. His preparation for the pneumonic influenza epidemic of 1913 enabled the State to meet the impact of this pandemic in 1919, the statistics of which are of a magnitude difficult to grasp by modern health administrators (approximately one-third of the population of Sydney was involved with a death rate of 1·3 per cent, and some 14,000 hospital admissions during its course of 9 months). He was a vigorous administrator, forever pressing his claims for better public health legislation in which he was partially successful in the amended Public Health Act of 1915, and the new Nurses Registration Act and Venereal Diseases Act of 1918. When he retired at the age of 65 years he handed over to Armstrong a department of whose achievements he could be proud, and which had functioned and sustained the traditions of Ashburton Thompson.

William George Armstrong was Director General for but 3 years (1921–24), a fitting climax to a dedicated career in public health during which he held the positions of Medical Officer of Health for Sydney and City Health Officer; Senior Medical Officer of Health for New South Wales; and lecturer and examiner in jurisprudence and public health at Sydney University. His was the unique honour of being the first graduate from the Medical School of Sydney University. There were three graduates in the year 1888, and as they were called up alphabetically in that year, W. G. Armstrong was called first. He has been described as a magnanimous man; an outstanding administrator; a gentleman under all circumstances; and a practitioner activated throughout his long life by the highest ideals of his profession. His career was not spectacular, and he is remembered for his control of the bubonic plague outbreaks of 1900 (in conjunction with Ashburton Thompson) and 1921; his epidemiological study, with Smith and Cleland, of the pneumonic influenza pandemic of 1919, and his continued dedication and concerted action to reduce infant mortality. His pamphlet *Advice to Mothers*, in which he strongly urged breast feeding as the greatest safeguard against gastro-enteritis—then the outstanding cause of infant mortality—was sent to every address at which a birth was registered. Although never a robust man, he lived beyond his allotted span and died in 1942 at the age of 82.

Robert Dick during his long period of occupancy of his office from 1924 to 1934 never enjoyed the same opportunities and support as did his predecessors. He was preoccupied with deployment of meagre resources constantly strained by recurrent epidemics and further dampened by the great depression. His training in public health was traditional and extensive, although limited geographically to the Newcastle-Hunter River Combined Sanitary Districts, to which he was appointed as one of the first two full-time Medical Officers of Health in April, 1898. Thereat he served until his promotion to Senior Medical Officer of Health immediately prior to his appointment as Director General of Public Health. He was one of the few Medical Officers who were permitted to undertake Army service during World War I. Undoubtedly the reputation of the Department

suffered during this period, especially in the eyes of the medical profession, and public health was no longer sought as a desirable vocation in medicine. Routinely the Department continued passively to meet its immediate demands, and scientific inquisitiveness and forward planning were not intruded into its philosophy.

I served under my two immediate predecessors—briefly and in the role of a scientific Director under E. S. Morris (1934–52), and Deputy Director General of Public Health to H. G. Wallace from 1952–59. Morris and Wallace were examples of the "grand" school of public health administrators—gentlemen of culture and professionals with deep knowledge and extensive experience. Both had experienced the dismay and pessimism which pervaded the apparently fruitless campaign against the ravages of infectious disease which, prior to World War II, filled the whole horizon of preventive medicine. Each had the satisfaction of witnessing the dramatic success of this campaign in the immediate postwar years.

Morris was a Quaker, a kind man of great humanity and deep humility and paradoxically one of the best *raconteurs* and afterdinner speakers that I have heard. He had a particular interest in maternal health, in which by thesis he gained his doctorate in medicine. He was responsible for encouragement and extension of the system of Baby Health Centres and the establishment of the Division of Maternal and Baby Welfare. He saw the Department of Public Health created as a separate Department by transfer of remaining health services from the Chief Secretary's Department, and accepted loyally the decision to appoint a non-medical Under Secretary as permanent head. Circumstances in the advent of World War II denied him the opportunity to display his administrative ability to the full. He was never happy in his additional position of Inspector General of Mental Hospitals, which diverted his time and enthusiasm from his public health administration. Although he was blamed for the continued declining reputation of his Department and its image in the eyes of his profession, he served in troubled times, when support was meagre and resources extended.

Wallace was a quiet diffident person, whose serious mien could change with a whimsical smile as he discoursed widely and variously on literature and the arts. The son of an erudite father, he spent his immediate post-school years in Lyons with French relatives, so intensifying his love of literature and languages and appreciation of wine. He graduated from Melbourne University immediately after World War I, and chose public health as a career, serving initially in New Guinea and then New South Wales as Medical Officer of Health, Newcastle. He was posted to Sydney as Senior Medical Officer of Health and Director of Tuberculosis in 1934, proceeding to the first appointment of Deputy Director General of Public Health in 1941 when Morris assumed his additional responsibilities in mental health. Morris was so involved in mental health that Wallace was in fact, if not by appointment, senior administrator in public health, and regarded as such by his staff. He had been too long in the subsidiary position when he succeeded Morris as Director General in 1952, and he never appeared comfortable in exercising the authority so endowed on him.

He was not ambitious and I suspect he was happier in his previous roles of Medical Officer of Health and Director of Tuberculosis where he could apply his professional expertise to the problems in hand. He was over diligent to his administrative obligations and so meticulous and unaware of time that he constantly continued far into the night, to the repeated dismay of the caretaker of Winchcombe Carson. His personal and gentlemanly qualities earned him the respect and loyalty of his colleagues and staff, who regarded him not as their executive superior, but rather as a dependable and sincere friend forever offering support and encouragement.

It is with diffidence and embarrassment that I arrive at my term of office. That which I record is not with overtones of self-aggrandizement, or to publicize my performance, or stimulate comparisons with my predecessors, but rather to catalogue some of the events in which I have been involved as innovator, observer and participant. There is much with which I am proud to be associated. There is also the discord of disappointment.

I have served under three Chairmen of the Public Service Board and four Ministers of Health, through times of crisis, scandal and drastic reorganization following the Royal Commission into Callan Park Mental Hospital; the prolonged period of consolidation and development thereafter; culminating now in yet further reorganization following the report and recommendations of the Starr Committee.

I was fortunate as a public servant to hold the confidence of the late Wallace Wurth and the Government of the day, and so be given, temporarily, authority and privileges which were unique in the public service system. I was permitted to recruit key staff and propose salary levels, terms and conditions of service, and additional benefits quite foreign to other departments and government authorities. Thus, I was able to negotiate a personal Chair with the Sydney University as an incentive towards attracting one of Australia's prominent scientists as Director of Psychiatric Research (unfortunately the approach was unsuccessful for quite different reasons); to establish without restrictions a sophisticated unit of fundamental neuro-pharmacological research; to commit Government to purchase of property to provide accommodation for key professional and scientific staff; to arrange through the Department of Public Works negotiated contracts outside the tender system to provide prestige scientific and medical units, and to enter into conditions of substantial capital subsidy with religious and voluntary organizations. And so were established the Institute of Clinical Pathology and Medical Research, psychiatric units in general hospitals, geriatric and psycho-geriatric units both within and external to the administration of the Department, to cover in part areas of deficit disclosed by the Royal Commission, or by the reports of the Health Advisory Council constituted subsequently as the agent of reform.

The Health Advisory Council was a unique administrative device, well in advance of its day, which determined the principles on which the Department's policy and services were reconstructed following the Royal Commission into Callan Park Hospital. It was unique in that it was an external agent of audit, constituted of experts in the various disciplines of health, who were appointed because of their expertise with no obligation to the Department or the Public Service. The Council was granted adequate finance to conduct its own studies on a comparative basis throughout Australia and overseas. Its first three reports are still the basis on which the Department's psychiatric, geriatric and mental retardation programmes are based. From its report on psychiatry the Institute of Psychiatry was established as a statutory educational authority in psychiatry for New South Wales, so giving this State a pre-eminence in this role which it has maintained to the present. I regret that its two final reports were unacceptable, although that on forensic medicine has been largely implemented with the establishment and location of the Division of Forensic Medicine in the modern forensic laboratories and morgue at Parramatta Road. Undoubtedly failure to accept its later reports was a motivating factor, although not the only such, in the decision of the Council to disband. Its mechanism and mode of investigation has been somewhat duplicated in the Committee of Enquiry into Health Services of South Australia.

The Health Advisory Council would not have been able to fulfil its role had not Public Health and Psychiatric Services been integrated under a common professional direction, when I was appointed to the combined post of Director General of Public Health and Director General of Psychiatric Services in 1961. Such an integration had previously been attempted under one of my predecessors, Dr E. S. Morris, immediately prior to the establishment of the Department of Public Health in 1941. This prior experiment failed for the same reasons which were still extant and active, and which conditioned me to resign as Director General of Psychiatric Services in 1963.

Neither I, nor Morris, enjoyed the confidence or active co-operation of the professional staff of the Psychiatric Services, despite the goodwill of many individuals involved in the service. The reasons operating on both occasions were philosophical, professional, status (this with strong historical influence), and personal loyalties. The atmosphere of veiled hostility and passive acceptance was not conducive to professional or administrative efficiency. I sense that many of these factors are still operating, although not overt. It may well be that an anonymous Health Commission will be more successful in removing personal and professional barriers to integration of these two services.

The decade of consolidation provided the opportunity to plan further reorganization of my administrative sectors. A Bureau of Maternal and Child Health has been constructed from the separate Division of Maternal and Baby Welfare and the School Medical Service; the Division of Venereal Diseases has been upgraded to a Division of Epidemiology; the significance of perinatal morbidity and mortality has been further emphasized by the creation of a Division of Maternal and Perinatal Studies (the only such in Australia), and likewise, also unique in Australia, a Central Cancer Registry has been established to analyse statutory notifications of cancer. Health education has expanded rapidly to become a dynamic supplier of resource personnel, as well as continuing its static function as the source of educational material. New services have been developed to administer pollution and drug laws.

Towards the latter end of this decade there has been a greater emphasis on institutional type services in the fields of health and social welfare, both within and outside the administration of the Department, stimulated by grant attracting legislation of the Commonwealth. This had tended to dampen priorities and funds for expansion in public health and preventive medicine. And yet public health campaigns have been successful. Who would dare to predict even a decade ago the total disappearance of poliomyelitis and the near extinction of diphtheria. The tuberculosis programme has been so successful that New South Wales has one of the lowest incidence rates in the world. And likewise for maternal mortality to the degree that it is no longer a reliable index of maternal morbidity and the standard and quality of obstetric services. The perinatal mortality rate is now more significant as the guide to maternal and new-born preventive health services. Haemolytic disease of the new-born is now preventible, and, in another decade, I hope that congenital malformation in infants due to maternal rubella will be but a memory.

Emphasis in health delivery is swinging from the traditional and competitive triad of private practice, hospitals and Government services to community involvement in which all three are co-ordinated to social and therapeutic objectives. Decentralization and regional autonomy of services are accepted in principle, although translation into fact has still many pitfalls and difficulties. Social problems, pollution, alcohol, drug abuse, traffic trauma and metabolic and degenerative diseases are the current epidemics which threaten our communities. To minimize these challenges new philosophies, new techniques, and resources and finance of a magnitude embarrassing the Government will be required. The demands of the present and future are as challenging as those of the past, but of different magnitude and quality. They will not be easily met, nor are there facile and rapid solutions. They involve the very quality of our life mode.

Of myself I have been privileged to serve on the National Health and Medical Research Council, and its Public Health, Evnironmental Health, and other major committees; to be appointed as the only member outside of South Australia on the Committee of Enquiry into Health Services in that State; to have served the World Health Organization on a number of occasions as an expert consultant in health administration, and more particularly to be invited on a personal basis to join its Expert Committee on Public Health Administration, and participate in the deliberations of that

Committee in production of its publication "Organization of Local and Intermediate Health Administrations". Throughout my term of office as Director General of Public Health I have moved among and identified myself with my profession, without conflict of loyalty between my vocation and profession. I hope that in some measure my occupancy of this office has been responsible for the cordial relations which exist between the medical profession of New South Wales and the Department.

One of my most personally rewarding duties has been the honour to preside over the Board of Health, and participate in its high reputation, tradition and service. Always its primary obligation was protection of the health of the public and citizens of New South Wales, and never, in my knowledge, has it failed to meet this obligation. I am proud to have joined its distinguished lineage of Presidents, just as equally I am proud, and sad, to be the last occupant of the oldest Public Service office in Australia.

THE STATE OF THE PUBLIC HEALTH IN NEW SOUTH WALES

During 1971 public health services were maintained in *status quo* due to financial restrictions imposed on the Department. Recruitment was barely sufficient to meet the demands of the natural growth of the population, and variations of services or establishment of new services were dampened to accommodate to these circumstances. Substantial support will be needed in 1972 for two new services arising from legislation introducing central notification of cancer by amendment of the Public Health Act in 1970, and control over pollution of the waters of the State under the Clean Waters Act, 1970.

It was decided that notification of cancer should commence as from 1st January, 1972. To meet this date Dr J. Ford was appointed as Registrar of the Central Cancer Registry. The informal Advisory Committee, which had been active for some 3 years to obtain acceptance of the principle of cancer notification, continued to meet on a more formal basis to advise on regulations necessary for notification; to ensure the co-operation of the Universities of Sydney and New South Wales, and major teaching hospitals associated with their medical faculties, and to assist in problems arising from technical dissection, classification and collation of data. A pilot study was conducted, with the co-operation of a number of metropolitan hospitals and selected hospitals in the Newcastle and Wollongong districts, to test the feasibility of notification and the efficiency of administrative procedures to cope on a time-basis with notification returns. The stage is set to commence in January, 1972, and the portents are that this experiment will be successful. By the first quarter of 1973, New South Wales should be able to supply, for the first time in Australia, reasonably accurate figures on the incidence and prevalence of cancer. I am hopeful that, later, other States may follow this example and so provide national statistics.

The Clean Waters Act received assent on 3rd November, 1970. This State, or for that matter Australia, has not had previous experience with a comprehensive Act of this nature, relying essentially on classification of waters and control measures to maintain or improve such classifications from pollutant sources. Professor P. W. S. Ryan, previously Associate Professor of Public Health Engineering at the University of New South Wales, was engaged as a temporary consultant to propose the format and content of regulations in anticipation of the formation of the Clean Waters Advisory Committee under the Act. During the year Mr D. Moore was appointed as Principal Water Pollution Control Engineer to organize the Water Pollution Control Branch, and co-operate with Professor Ryan in the development of tentative regulations. The first meeting of the Clean Waters Advisory Committee was held on 26th July, 1971, with the immediate and urgent task of advising the Minister on regulations, so that the Act may be proclaimed and administrative control exercised. The Committee's target date to complete this task is May, 1973, and already it is well advanced towards this objective. Adequate support from Government in terms of staff and equipment will be necessary for the administration of this Act. Preliminary estimates are being prepared for the financial year 1972–73.

Considerable confusion exists between the relative roles and responsibilities of the Departments of the Environment, Health, Transport, and the Maritime Services Board over control of environmental pollution. This has been heightened by the proposal to appoint scientific staff to the Department of the Environment and the failure of well-qualified and experienced senior Health Department staff to succeed to these positions; the more so as international and interstate agencies frequently seek assistance from these senior staff members as expert consultants. I have no doubt that with time suitable statutory and administrative adjustments will be made towards a concerted and non-competitive approach to pollution control. Maybe the most successful solution will be at the political level in a combination of the Ministries of Health and Environmental Control. There are so many implications which extend from technical pollution control to public health surveillance, and so many subsidiary public health acts and administrations involved, that the common philosophies would appear to be more compatible in a combined political context.

The study of the Starr Report on reorganization of health and hospital services was continued during the year by the working party, to which reference was made in my previous report. The working party is responsible to the Steering Committee consisting of the Minister for Health, as Chairman, the Chairman of the Public Service Board, the Under Secretary of the Department of Health, the Chairman of the Hospitals Commission of New South Wales, and myself, in my office of Director General of Public Health.

A prototype Act to constitute a Health Commission integrating Government administrative sectors of health services and the Ambulance Transport Board has been considered by the Working Party. It is proposed that the content and implications of this major statutory reorganization will be published in a Consultative Document to obtain reactions and comment of individuals and organizations involved before legislation is submitted to Parliament in 1972. As Chief Medical Officer to the Government I intend to make a personal submission, and likewise on behalf of the Board of Health as its President.

I continued throughout 1971 as a member of the Judicial Committee of Enquiry into Health Services of South Australia attending Adelaide for meetings at monthly intervals. Membership of this Committee has given me an insight into standards and organization of health and allied services in South Australia, which will be valuable on a comparative basis in assisting reorganization of similar services in this State. The Committee in South Australia is receiving and hearing submissions on life quality, philosophy of health care delivery and acceptance, the community and its role; health education and organization and administration of public, private, community and voluntary sectors of health and welfare services. It has its own research staff to mount studies where local data is insufficient or deficient. Towards the end of the year it commenced deliberative discussions for the purpose of formulating its recommendations.

Twice during the year I proceeded overseas, in June as a member of the Australian delegation to the Codex Alimentarius Commission, which met in Geneva, and again to the same city in October to participate in a study by the World Health Organization. I was honoured to be appointed Vice-Chairman of this study group whose deliberations will be published as a technical report by the World Health Organization. The subject is organization of local and intermediate health administrations. As you are aware membership of a World Health Organization expert committee is on the basis of personal invitation.

The Investigating Committee as constituted under the Medical Practitioners Act received and investigated eighteen complaints with the following decisions: twelve complaints dismissed, four complaints found proven and reprimands issued, and two complaints referred to the Disciplinary Tribunal for further hearing and determination. The substance of the complaints were five convictions, six allegations of failure to attend in an emergency, seven complaints from individuals alleging infamous or unethical conduct. My protestations in previous years against the inadequacy of the Act to give adequate support to a genuine complainant whose complaint is subsequently referred to the Disciplinary Tribunal will be rectified in amendments to the Medical Practitioners Act now under consideration. One such amendment will enable the Investigating Committee itself to initiate the complaint to the Disciplinary Tribunal through a nominal complainant who is a member of the Public Service. And so the complaint will be prosecuted by the Crown at its expense, and not as previously at the expense of the individual complainant.

The first stage of the reorganization of the Division of Epidemiology, towards separating its functions of venereal disease and epidemiology was achieved in this year, with the opening of a female clinic in juxtaposition to the male clinic. The staffing of the venereal disease clinics is separate from the epidemiology sector, thus permitting the latter to concentrate on the incidence of communicable diseases and develop research on the prevalence and effects of non-communicable disease. With this discrete separation of function it will be possible for the Director to seek funds from research endowment organizations to support epidemiological studies. Epidemiology is the basis on which audit can be conducted on existing preventive health services and provides data for development or support of new services, whether departmentally organized or otherwise. I am hopeful that in the future Government might fund separately to support epidemiological research both through the activities of this Division, or to outside institutions or to both in combination.

Another major reorganization was achieved in the field of tuberculosis in which the Division of Tuberculosis and the Anti-Tuberculosis Association of New South Wales have both been active in case finding and clinical supervision. The incidence of tuberculosis in New South Wales is among the lowest in the world. Discovery of new cases by mass radiography is now approaching the limit of cost-benefit compared with other sources of discovery. Rationalization of activities between the Department and the Anti-Tuberculosis Association was obtained by agreement between the two organizations and the Commonwealth Health Department. From July the Anti-Tuberculosis Association will be given the mandate to conduct mass radiography surveys and will phase out its clinical activities. There will be adjustments of staff between the Department and the Association, and the Department's assets of radiography caravans will be transferred to the association. The association's programmes will still require the approval of the Department which will act as its agent in follow-up of compulsory surveys. This co-ordination of effort will result in a financial saving of between $200,000 and $300,000 per annum.

Before proceeding to short summaries of the activities of various Divisions and Sections of my administration, I am pleased to report that the public health in New South Wales is very stable as compared with previous years. There have been no outstanding fluctuations in disease incidence in either communicable or non-communicable diseases.

VITAL STATISTICS

The estimated population of New South Wales at the end of 1971 was 4,640,800 comprising 2,325,800 males and 2,315,000 females. The total increase in population was 77,600 including excess of births over deaths 56,775 and net migration 20,800. The crude birthrate rose marginally from the 1970 figure of 19·33 to 21·40. This was the fourth annual rise after six successive annual drops.

The number of stillbirths registered was 1,182 being 1·19 per cent of all births (live and still). There were 41,691 deaths for the year, including 1,710 infant deaths under one year of age. This gives a crude death rate of 9·08 per 1,000 of population (1970, 9·55) and an infant mortality rate of 17·37 per 1,000 live births (1970, 19·71).

COMMUNICABLE DISEASES

A table showing the totals of diseases notified under the Public Health Act, 1968, will be found on page 24 of this report.

There were 2,615 cases of infectious hepatitis with 14 deaths. There was no marked seasonal prevalence.

During the year there were sixteen cases of typhoid fever. In seven of these cases the infection was acquired overseas. Four cases occurred in personnel working in the laboratories of the Prince Henry Hospital, Little Bay. In three of these cases the disease appears to have been caused by strains of *S. typhi* of identical bacteriophage type. The source of the outbreak could not be identified with certainty, but may have been due to unrefrigerated milk consumed within the laboratory building.

The source of infection in four of the remaining cases could not be traced. In one case the source was traced to an elderly female carrier who conducted a milk bar in a South Coast resort town. She was prohibited from handling food until she was rendered non-infective by treatment.

VENEREAL DISEASE

There was a rise in the number of notifications of gonorrhoea. A total of 3,943 cases were notified compared with 3,497 in the previous year—an increase of 12·6 per cent.

This rise follows falls of a similar magnitude in the previous 2 or 3 years. Neither the previous falls nor the present rise are interpreted as true fluctuations in the incidence of gonorrhoea, but rather as variations in the rate of notifications, due to unknown factors.

Three hundred and sixty-two cases of syphilis were notified in 1971, compared with 448 in 1970—a decrease of 19·2 per cent.

The reduction in the number of notifications should not be regarded necessarily as a sign of decrease incidence. There has been a definite rise in cases notified from the metropolitan area (339 in both sexes in 1971 as against 253 in 1970).

The fall in total notifications is due to the application of stricter criteria including unnotified cases in the statistics.

HANSEN'S DISEASE

On the 31st December, 1971, there were eight patients—four males and four females—under treatment for leprosy as inpatients in the Institute of Tropical Medicine, Little Bay.

During the year four cases were admitted to the institute including a Greek national admitted from a Greek merchant ship; an aborigine who had recently arrived from Queensland; an Englishwoman who had spent most of her life in Rhodesia and 18 months in the Seychelle Islands and had recently arrived in Australia, and a Cypriot. There was no case of transmission of leprosy in New South Wales. Contacts of all cases are kept under surveillance.

POLIOMYELITIS

No cases of paralytic poliomyelitis were reported during the year.

Sabin vaccine for immunization against poliomyelitis became easier to obtain as in 1971 it was made available to private medical practitioners and some Baby Health Centres, in addition to the health departments of local councils.

TUBERCULOSIS

Notifications of new cases of all forms of tuberculosis for 1971 (498) as compared with 1970 (644) showed a further marked decrease. In addition a decrease was noted in the reactivated cases for 1971 (73) as compared with 1970 (86), but the 1971 number is still higher than for 1969 (55). As previously most of the reactivated groups came from patients from the pre-chemotherapeutic era, or if later have a history of inadequate treatment. Incidence of tuberculosis is 0·12 per 1,000 compared with 0·14 in 1970. The rate was ten times as high when the campaign commenced in 1950.

A decrease from 1·40 to 0·75 per 100,000 in the mortality rate has occurred during 1971. As in previous years the majority of deaths were in the over 50 age group. A decrease was shown in male deaths from fifty to twenty-nine. From a total of thirty-five (six being females) fourteen cases were shown to be due to the late effects of tuberculosis as compared with thirty-three in 1970. The mortality rate in 1950 was twenty-five times higher.

The migrant proportion of the total notifications (172 cases) is 35·25 per cent in 1971 as compared with 35·8 per cent in 1970. In this respect it is emphasized that of the 172 notifications 29 cases were notified within 1 year of arrival; 38 cases within 1 to 5 years of arrival; and 105 over 5 years of arrival.

Details of activities and statistics are set out in the Director's report.

HEALTH INSPECTION

The Health Inspection Branch at Central Administration is responsible to the Metropolitan Medical Officer of Health for the work carried out in the metropolitan area.

Regular inspections were made by branch officers of approved nightsoil and garbage depots. Generally, disposal procedures at nightsoil depots were satisfactory. In several instances, however, the methods used to dispose of garbage were not being applied to ensure that nuisance was avoided.

It is evident that modern packaging and extensive use of disposable plastic and paper products for consumer goods is placing high demand on existing garbage depots and areas for "trade waste" disposal.

The future needs for garbage disposal in the metropolitan area of Sydney will require extensive enquiry and planning. In this regard the Health Inspection Branch has been working in close liaison with the Department of the Environment and the Metropolitan Waste Disposal Authority on the problems which may occur in the field of environmental sanitation.

Public swimming pools were regularly inspected during the swimming season and field tests of water carried out at pool sides permitted a ready appraisal at a given time of the quality of pool water. This routine, coupled with bacteriological examination has led to improvement in maintenance and care of water quality. Seaside and salt water swimming enclosures were kept under observation in the same period.

FOOD INSPECTION

The work of the Food Inspection Branch is primarily concerned with the supervision of the sale of food, and in a minor way with drugs, in regard to their composition, identity and labelling; the structure and condition of premises in which food and drugs are manufactured, stored and sold; the inspection of the equipment, appliances and vehicles used; the incidental duties associated with matters to secure the wholesomeness, cleanliness, and freedom from contamination of food and drugs; and the implementation of the legal provisions required by the Pure Food Act, 1908, as amended.

A total number of 3,157 samples of food of various kinds were purchased and submitted for analysis, and 3,376 samples of meat and 1,417 samples of spirits were field tested by officers of the Branch. Four hundred and eighteen samples of food were found to be below the prescribed standard and 217 successful prosecutions were instituted against traders for selling adulterated food and food not of the nature demanded by the purchaser; resulting in the imposition of $13,378 fines and costs.

A total of over 121 tons, including large quantities of cheese and dates were seized and destroyed, in addition to 5,224 head of poultry, 150 doz cartons of prawns, 1,028½ doz cans and 315 gallons of foods being unfit for human consumption.

Of 3,884 premises used for the storage, preparation or sale of food inspected, 88 notices were served on occupiers of premises which required some remedial action in the way of structural repairs or other defects to comply with the provisions of the Act and Regulations.

Twenty-three traders who failed to keep premises clean were convicted and fined a total of $3,522.

One hundred and eight convictions were recorded for general breaches, and traders were fined a total of $4,732. Complaints made by members of the public number 2,143; many of which resulted in legal proceedings against food traders and persons delivering food in contravention of the Regulations.

The total number of prosecutions was 348 and fines and costs amounted to $21,632.

PRIVATE HOSPITALS AND REST HOMES

The Private Hospitals Act was amended during the year, the principal effect of which is to transfer administration of the Act from the Board of Health to the Hospitals Commission of New South Wales. The transfer is expected to be effective on 17th March, 1972.

The Private Hospitals Branch supervises private hospitals and rest homes in accordance with the licensing provisions of the Private Hospitals Act and Regulations thereunder. Premises are routinely inspected twice annually, and additionally for licensing new or altered premises, to give advice, in the event of complaint, and to determine requirements for transfer of licence.

The licence of one rest home was revoked during the year, and the licensee appealed to the District Court which upheld the revocation.

At the end of 1971 there were in the metropolitan area 86 private hospitals with 3,239 beds and 258 cots, and 374 rest homes with 17,517 beds and 190 cots. In the rural health districts there were 27 private hospitals with 620 beds and 39 cots, and 76 rest homes with 2,618 beds. The total number of beds in private hospitals and rest homes (24,298) is almost equal to that in the general hospital sector (25,198).

POISONS BRANCH

The Poisons Branch administers legislation controlling the manufacture, distribution and use of drugs and poisons.

The principal legislation at present administered by the Branch is the Poisons Act, 1966.

In November, 1971, a Therapeutic Goods and Cosmetics Bill was introduced in Parliament by the Minister for Health. This legislation will also be administered by the Poisons Branch.

Routine inspection of premises where drugs and poisons are handled has continued to be the major activity of the staff of the Poisons Branch. The time available for routine inspections, however, has continued to be eroded by an increasing need to devote attention to particular problems such as an increasing interest of medical and allied personnel in addict management and the use of methadone as a substitute for illicit drugs in the initial stages of addict rehabilitation; the continued diversion of drugs of dependence from licit avenues of distribution, through theft, armed robbery and prescription forgery; the development of international and national policies and agreement on drug and poison control and their incorporation in State legislation, and the need to develop means of communicating with groups of people responsible for distribution or authorizing the distribution of drugs.

Drug security has been given a high priority in measures aimed at preventing diversion of drugs to the illicit market. During the year there were no reports of theft of drugs of addiction from manufacturers or wholesalers.

Prevention of poisoning is one of the main objectives under the Poisons Act, 1966. In the case of medicines, one of the methods of preventing accidental overdosage or untoward effects through incorrect use of drugs is to ensure that the more hazardous drugs are available only under medical supervision; and drugs of lesser hazard are available only from pharmacies, where competent advice is available on the effects of those drugs, precautions in use and dosage.

The Poisons Branch has maintained a surveillance of data on drugs, both new and old, and has referred problems as they arose to the Poisons Advisory Committee. As a result the Poisons List has been amended on several occasions to accommodate new drugs and reflect new attitudes to old drugs.

Non-medicinal poisons are similarly kept under review, with particular attention being given to developments in the use of potentially hazardous chemicals for domestic, industrial and agricultural use.

Further details of these and other activities of the Poisons Branch are contained in the individual report.

DIVISION OF ANALYTICAL LABORATORIES

There were 7,876 milk samples analysed during 1971; 225 of these failed to comply with the Pure Food Regulations; 87 samples were deficient in milk fat; 106 showed presence of either added water or low milk solids-not-fat, and 32 samples were improperly pasteurised.

These samples were submitted for analysis by various authorities, viz. the Food Inspection Branch, Sydney City Council, Municipal and Shire Councils, Country Health Districts, and the greatest number was received from the Dairy Industry Authority of New South Wales.

Four thousand four hundred and forty-two samples of meat and meat products were examined during the year. One hundred and thirty-nine out of two hundred and twelve samples of meat, fresh and minced, were found to be preservatised with sulphur dioxide, and six with ascorbic acid. The addition of preservative to these classes of meat is prohibited. The reason for the high proportion, however, is that samples are routinely examined in butchers' shops by the malachite green test, and only those which are positive, or doubtful, by this test are submitted to the laboratory.

Two thousand seven hundred and ninety-eight samples of sausages and sausage meat were examined, and three hundred and twenty-five contained excessive amounts of sulphur dioxide, and six hundred and sixty-seven (23·8 per cent) contained excess fat, a similar proportion to that found last year. This proportion of adulteration is much too high, and reflects little credit on the retail trade.

Five hundred and thirty-nine samples of smallgoods were analysed, an increase of approximately 70 per cent over the previous year. Sixty-seven contained excessive amounts of nitrate, and fifteen excess sulphur dioxide.

One thousand six hundred and thirty-one samples were examined in the Food Bacteriology Section.

A food hygiene survey was carried out at the Prince Henry Hospital, 920 samples of food and related articles being examined. Salmonella typhimurium and a large number of coagulase positive staphylococccus aureus were isolated from frozen chickens and freeze dried egg albumen. Clostridium perfringens was isolated from a large number of raw materials used in the preparation of food. Many such raw materials were also found to contain large numbers of enterococci and faecal coli, both indicators of faecal contamination. An examination of slicing machines and carving knives revealed the presence of large numbers of faecal coli and enterococci. Some milk samples were found to be faecally contaminated. All disinfectants examined were found to be ineffective at in-use dilution.

It should not be inferred from this study that the bacteriological standard of food is lower at Prince Henry Hospital than in other hospitals. Rather it indicates the potential dangers present in the food services of all hospitals.

These dangers could be reduced by regular bacteriological testing of food, raw materials, disinfectants, etc., and the provision of adequate programmes of food hygiene instruction in hospitals.

The Report of the Director and Government Analyst sets out in detail the activities and statistics of the Division.

DIVISION OF FORENSIC MEDICINE

On the 15th October, 1971, owing to ill-health Dr J. Laing retired as the Director of the Division.

The Office of Government Medical Officer, now the Division of Forensic Medicine, has been held by a distinguished group of forensic pathologists, including as immediate predecessors to Dr Laing, the late Doctors Percy and Palmer. Dr Laing trained under Dr Percy and was early pre-chosen as his successor because of his special abilities and aptitude. To him is the credit of extending the activities of the position and Division from one which relied largely on personal expertize and judgment to a group approach using modern scientific tests and skills. He planned and supervised the Division's move to its new headquarters in one of the most modern and best equipped forensic science laboratories and morgue in the world, and certainly pre-eminent in Australia. I, and the Department, regret sincerely that ill-health has forced his retirement, and that he has been denied the pleasure and satisfaction of guiding the Division to even greater achievements.

Dr R. B. La'Brooy was appointed as the Director of the Division.

The Division moved into the new premises at 42–50 Parramatta Road, Glebe, on 24th August, 1971. The building also houses the coroners courts. The building was formally declared open by the Honourable Sir Leslie Herron, K.B.E., C.M.G., Chief Justice of New South Wales, on 20th August, 1971, before a company of distinguished officials and guests.

There were 2,009 specimens submitted to the Forensic Biology Section as compared with 1,522 in 1970; 1,237 post-mortem tissues (1,273 in 1970), and 2,760 cases admitted to the City Morgue, cases postmortemed 2,253 (2,878 cases admitted, 2,499 cases post mortemed in 1970).

The report of the Director sets out in detail the activities of the Division.

HEALTH EDUCATION

In consequence of the expansion of health education services during the past 2 years the Public Service Board this year approved of the reorganization of the Division, which will improve the quality of service given by the Division as well as providing better career prospects for professional and field staff. An Assistant Director has been appointed to assume charge of health education projects in the community.

During the year a position for a full-time Health Education Officer was established to develop programmes for Aborigines.

A detailed proposal was prepared for establishing a food hygiene education service in the Pure Food Branch; a migrant health education programme was introduced to meet the needs of major ethnic groupings for adapting to the Australian environment, making effective use of available services, promoting child and family health, and improving chest X-ray response. The first major emphasis in this programme was to boost immunization among migrant children, and a gratifying response was noted at the local government clinics in the areas affected.

Training was again a large component of the Division's services. An interesting and novel approach were two 1-day seminars on pollution and drug abuse. These were attended by a large number of students from metropolitan public and private schools. The object of these seminars is to involve school pupils in health education after return to the school, e.g., talks to fellow students, projects, seminars for parents and citizens groups, etc. During the 2 weeks following the seminar tutorials are given on health educational techniques to smaller groups of participants.

Details of the activities of the Division of Health Education during 1971 are set out in the Director's report.

BUREAU OF MATERNAL AND CHILD HEALTH

Further integration of the Bureau has occurred during 1971 at basic field services level; child health centre level; Health District level and in the central administration of the Bureau.

The Queenscliff Child Health Centre, which contains the Child Health Centre for Manly-Warringah, and the Diagnostic Unit for country children was opened in November, 1971.

The Blacktown Child Health Centre which is under construction in the grounds of the Blacktown Hospital will contain a child health centre, a mental health unit, and a day hospital for psychiatric patients. It is anticipated it will be completed in mid-1972. This will be the first such project to be completed within the grounds of a public hospital.

Under the Commonwealth scheme for financing programmes for Aboriginal health a Health Education Officer for Aboriginal Health, and a Liaison Officer for Aboriginal Health have been appointed to the staff of the Bureau. These officers have been appointed to support the community nursing programme for Aboriginal health established at Bourke, Moree, Wentworth, Dareton, Wilcannia, Narooma and Nowra, with two positions in the Sydney Metropolitan Area.

The programme for training of Aboriginal girls as nurse-aides is progressing, and so far seven nurse-aides have completed the training, twelve are in training and two have failed to complete their training.

Towards the end of the year a Health Education Officer for Aboriginal Health and a Health Education Officer, Maternal and Child Health, were appointed, and these officers should provide a much needed stimulus to all health education programmes in the Bureau.

Section of Special Services

This Section acts in a consultative role to the Sections of Child Health and Maternal and Infant Care.

During 1971, however, the diagnostic clinic for atypical children from country areas and those not as yet catered for by child health centres in the Sydney area was continued at head office.

Medical officers attended sessions in baby health centres and conducted well-baby clinics. These sessions are conducted as referral clinics to which infants and children may be referred for problems in feeding, sleeping, behaviour and other problems in development. Referrals are made by general practitioners and public health nurses.

A visit was made to Albury by a paediatrician, clinical psychologist, and a social worker to offer consultative service to medical practitioners, parents and Department of Education officers. Thirty-two new patients were seen by members of the team individually, or in combination, and appropriate recommendations were made to the referring person or agency.

Details of other activities and statistics are given in the report on this Section.

Section of Child Health

During 1971 progress has been maintained in integrating the service of this Section with the Section of Maternal and Infant Care as a step towards the fusion in the coming year of the two Sections, and the emergence of metropolitan and country sections in their place.

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During the year medical officers of the Section participated in eight on-going Preparation for Parenthood Courses, consisting of eight sessions each. One hundred and forty-four lectures were given compared with sixty-three in 1970.

There was a marked increase in the number of full and review medical examinations conducted at primary schools in the State from 198,616 in 1970 to 224,056. The increase in the metropolitan area was from 109,128 in 1970 to 124,149 in 1971. There was a slight increase in the number of children examined in the remainder of the State from 92,269 in 1970 to 99,907 in 1971.

Details of activities and vital statistics are set out in the report on this Section.

Section of Maternal and Infant Care

This Section during the year continued to maintain and promote preventive health services to mothers, infants, toddlers, and preschool children; and to encourage the use of baby health centres with the object of maintaining the total health of the family and the community at the highest possible level.

At the end of 1971 there were 440 baby health centres operating in New South Wales—161 in the metropolitan area and 279 in the remainder of the State. Tenders were let, or work commenced for new baby health centres at Redfern, Carlingford and Glen Innes. Action was also initiated with the Hurstville Council for the replacement of the departmental centre at Hurstville, and with the State Housing Commission for premises to establish a service at Emmerton.

At the centres 85,185 individual infants under the age of 1 year were seen. The sisters carried out 52,570 home visits and 63,783 mothers were visited in hospital.

There are sixteen pre-natal clinics operating in New South Wales. Six of these are consultant clinics and of these three are located in the Western Metropolitan Health District and three in the Newcastle Health District. Eight hundred and three sessions were conducted at these clinics and the attendances totalled twelve thousand one hundred and five.

On the recommendation of the *ad hoc* Committee on Immunization supplies of sabin vaccine are now kept at baby health centres. This vaccine is available for distribution to the general practitioners in the area, and the baby health centre sister dispenses the vaccine to families who have difficulty in obtaining it from their family practitioner or local council.

For details of activities and vital statistics see the report on this Section.

MATERNAL AND PERINATAL STUDIES

The Division of Maternal and Perinatal Studies has now been in existence for 2 years. Many of the projects were completed during 1971, and a volume of information has been obtained relating to the practice of obstetrics and neonatal paediatrics in the State.

The booklet *Obstetric Practice in N.S.W.* has been rewritten, and brought up-to-date with new material included. It should be ready for distribution early in 1972.

It was thought that the incidence of eclampsia in N.S.W. was increasing and in order to prove this a survey was carried out to ascertain the total number of cases in the two 5-year periods 1959–63 and 1964–68. This survey was inconclusive and statistics and comment are recorded in the report of the Director.

A retrospective survey on thromboembolism was done with a view to carrying out a prospective survey at a later date as it was felt that the number of cases of thromboembolism occurring during pregnancy and the puerperium was increasing. The figures received showed wide variations and led to the conclusion that prospective study would yield no worthwhile results until there was more consistency in diagnosis.

The report on maternal deaths in N.S.W. for the triennial 1964–66, 1967–69 has been completed and should be available early in 1972. It covers 200 deaths of which 140 were considered directly due to complications arising from pregnancy or childbirth. In the remaining deaths although pregnancy was or had been present it was not the primary cause of death.

Perinatal mortality is now a major concern of the Division and has in large measure replaced maternal mortality as the index of obstetric quality and maternal preventive programmes. The perinatal rate for the State decreased further for 1971 (24·51 deaths per 1,000 total births—live and still) as compared with a rate of 27·49 for 1970. The wastage is still too high, some 1,280 infants dying within the first 28 days after birth. The Division will be concentrating substantially on the causes of perinatal deaths to determine areas of prevention and correction.

The report of the Director sets out in detail statistics and activities in which the Division is involved.

POLICE MEDICAL BRANCH

For the first time a report from the Police Medical Branch, under Dr E. B. Pedersen, appears in this annual report. The Branch was established in 1964 when the police surgeon was separated from the Government Medical Officer's Branch, and given responsibilities to supervise medical standards and medical fitness of the New South Wales Police Force. Additionally it provides a medical expert who conducts and reports on examinations relating to allegations of carnal knowledge, abortion, and less so rape. The service also participates in lectures on health and physical fitness to cadets, probationary constables and members of the Force.

CENTRAL CANCER REGISTRY

I have referred previously to the Central Cancer Registry which commenced preliminary preparations in June for implementation of the amendment of the Public Health Act in January, 1972. The report of the Registry elsewhere sets out in detail the significance of cancer as a major cause of morbidity and mortality; philosophies and principles of prevention and control; functions of a central cancer registry; and its organization and proposed administration in New South Wales. Statistics on prevalence and incidence of cancer from the Registry will not be available until 1972, and not accurately as regards incidence until approximately 1974.

MEDICAL EXAMINATION CENTRE

The Medical Examination Centre has continued to expand its function and is requested to carry out an increasing volume of work. Service is now provided to eighty-three Public Service and allied Service Departments.

The Centre completed the year with a waiting time for appointment of some 8 weeks. The demands on the Centre are such that it will not function effectively unless additional space and staff are granted. There is a limit to the delay which can be permitted between request and performance of medical examinations, and hardship to the individual is inevitable where fitness to continue in the Public Service is involved. There have been examples of Public Servants requiring examinations to be superannuated who have had to take leave without pay because of delay due to inadequate resources. Space is equally important as staff, as without the former the latter cannot operate. Negotiations are proceeding to overcome this impasse.

Services and statistics are shown in the report on the Centre.

DENTAL SERVICES

During 1971 the decentralization of dental services continued successfully in the Newcastle and Western Metropolitan Health Districts, and dictates the pattern of future development.

Although the primary objective of the Division is to provide a clinical (treatment) service, several special surveys were undertaken, viz. an assessment of 381 geriatric patients in a large church home, and a survey of 264 6-year-old children who had resided continuously in the Grafton-Lower Clarence region since fluoridation of the water supply commenced in 1964. The results of this survey confirmed previous indications in other areas of the State that a marked improvement in dental health was achieved.

The very important dental services to the western half of the State were continued successfully through the Royal Flying Doctor Service (N.S.W. Section) based at Broken Hill, and the Western Shires Dental Service operating from Balranald and Brewarrina. The rural recession had adverse effects on the financial support of the scheme at local level.

A total of 370 schools were visited by the School Dental Service during 1971. Of 44,629 infants and primary school children examined 42·8 per cent were notified of serious dental defects. Only 22·6 per cent had naturally healthy teeth. It was obvious that the younger children who had lived in Sydney continuously had benefited from fluoridation. As in previous years a higher incidence of dental disease was noted in migrant children.

Details of the activities of this Division are set out in the report of the Director.

DIVISION OF OCCUPATIONAL HEALTH AND POLLUTION CONTROL

The Division of Occupational Health and Pollution Control is a medical and scientific Division, its two main responsibilities being to assist in safeguarding the health of the industrial community and to administer the N.S.W. Radioactive Substances Act, 1957, the Clean Air Act, 1961, and the Clean Waters Act, 1970.

There are five Branches in the Division, viz. Industrial Hygiene, Medical, Radiation, Air Pollution Control and Water Pollution Control. Each Branch undertakes many specialized activities, or aspects, of its overall broad function.

The Division has energetically pursued its programmes during 1971. Its reputation is such that it attracted fourteen visitors from overseas during the year, and four of its staff were invited by the World Health Organization to act as consultants in occupational medicine, pollution control, and design of protective equipment. Twenty-two articles were published during the year, three in overseas journals and the remainder in Australian journals. Five hundred and ninety-one lectures were delivered to approximately sixteen thousand people.

During 1971 the Water Pollution Branch was formed, and Mr D. D. Moore, formerly Senior Preservation and Research Engineer of the Maritime Services Board of N.S.W., was appointed as principal engineer. During the first half of the year a great deal of preparative work was done on draft regulations under the Act. The main functions of the Branch, however, are the implementation of the Clean Waters Act, 1970, and the monitoring of the natural waters of New South Wales. The Clean Waters Act was drawn up to provide a mechanism for unifying control of water pollution by providing a single overriding statute which could be applied to all natural waters, including waters, underground waters, and the sea (within the territorial limits of the State). The Clean Waters Advisory Committee was constituted during 1971.

Further details regarding this Branch, and the other Branches in the Division are set out in the report of the Director.

THE INSTITUTE OF CLINICAL PATHOLOGY AND MEDICAL RESEARCH

The Institute of Clinical Pathology and Medical Research was established in 1959, and provides a comprehensive clinical pathology service for the whole of the State of New South Wales available free of charge to all public and State hospitals, and to medical practitioners attending patients unable to afford the fees of private pathologists.

The Pathological Anatomy and Histology Section is concerned with the gross and microscopic study of tissues removed surgically for purposes of diagnosis, or for assessment of progress during the course of treatment. Of particular importance is the diagnosis of malignant disease as it is only by histological examination that this can be definitely confirmed or excluded.

The number of specimens received during the year totalled 13,856, from which 57,044 sections were prepared or examined. It is of interest that in 2,036 instances the diagnosis of cancer was established (787 major cancers; 1,249 skin cancers); equally noteworthy is the large number of people who could be reassured that their disease was not malignant.

Exfoliative cytology is concerned with the microscopic examination of cells which as a normal event are constantly being shed from body surfaces. It is now well-recognized that changes indicative of developing cancer are recognizable in such exfoliated cells long before the disease becomes manifest clinically. Cancer of the cervix of the uterus, one of the commonest cancers of women, is particularly susceptible to early detection by this method, and in 1962 an Exfoliative Cytology Section was established at the Institute in order to provide a statewide service for the early detection of uterine cancer. During the year the work of this section expanded further, specimens being submitted by some 3,000 doctors from all over the State. In all, 218,312 specimens were received, an increase of 8 per cent over the figure for 1970.

The institute enjoys full recognition by the University of Sydney and the Royal College of Pathologists of Australia as an approved laboratory for the training of medical graduates seeking specialist qualifications in pathology. The training of technical officers and medical technologists is conducted at the institute on an apprenticeship system combined with part-time formal studies at the Sydney Technical College.

Details of the various activities of the institute and statistics are set out in the report of the Director under the following headings:

A. Clinical Pathology Services,
B. Training of Pathologists and Medical Technologists, and
C. Research.

The reports of the individual Division and Sections of my administration follow.

In conclusion I wish to acknowledge my gratitude to my Directors and all staff who have worked for me in Public Health programmes during my office as Director General of Public Health.

Yours faithfully,

C. J. CUMMINS,
Director General of Public Health.

7th December, 1972.

VITAL STATISTICS

Table I—Vital Statistics by Health Districts, 1971

	Health District	Population 30th June 1971 (a)	Live-births (b)	Deaths				Still-births (d)
				All ages (b)	Under 1 year (c)	Under 1 month (c)	Under 1 week (c)	
NUMBERS	Metropolitan	2,014,810	40,720	20,351	737	542	488	489
	Western Metropolitan (e)	774,206	19,419	5,003	327	242	242	221
	Newcastle	552,059	11,352	5,600	154	112	101	122
	South Coast	353,523	7,872	2,735	133	102	95	95
	North Coast	160,970	3,023	1,499	53	43	39	34
	Western (e)	273,123	6,059	2,684	131	90	83	98
	North Western	166,184	3,736	1,351	80	56	54	50
	Riverina	254,227	5,570	2,149	85	64	63	68
	Broken Hill	29,743	615	295	9	9	8	4
	Remainder of State	5,008	100	24	1	..	..	1
	Migratory	5,703	..	..	..	..	..	..
	New South Wales — Males	2,302,110	50,271	22,603	977	721	659	637
	New South Wales — Females	2,287,446	48,195	19,088	733	539	488	545
	New South Wales — Persons	4,589,556	98,466	41,691	1,710	1,260	1,147	1,182
RATES	Metropolitan		20·21	10·10	18·10	13·31	11·98	11·87
	Western Metropolitan		25·08	6·46	16·84	12·46	12·46	11·25
	Newcastle		20·56	10·14	13·57	9·87	8·90	10·63
	South Coast		22·27	7·74	16·90	12·96	12·07	11·92
	North Coast		18·78	9·31	17·53	14·22	12·90	11·12
	Western		22·18	9·83	21·62	14·85	13·70	15·92
	North Western		22·48	8·13	21·41	14·99	14·45	13·21
	Riverina		21·91	8·45	15·26	11·49	11·31	12·06
	Broken Hill		20·68	9·92	14·63	14·63	13·01	6·57
	Remainder of State		19·97	4·79	10·00	..	..	9·90
	New South Wales		21·45	9·08	17·37	12·80	11·65	11·86

(a) Preliminary Census figures.

(b) Rates per 1,000 of mid-year population.

(c) Rates per 1,000 live-births.

(d) Rates per 1,000 total births (live and still).

(e) Old boundaries. On 22nd October, 1971, City of Blue Mountains was transferred from the Western to the Western Metropolitan Health District.

Table II—Estimated Population and Elements of Increase, 1971

	Population at end of year	Population mean for year	Excess of births over deaths	Net migration	Total increase
Males	2,325,800	2,307,000	27,668	10,200	37,900
Females	2,315,000	2,293,600	29,107	10,600	39,700
Persons	4,640,800	4,600,600	56,775	20,800	77,600

Table III—Crude Birth Rate: 1965–70

Year	Live births per 1,000 mean population
1965	18·71
1966	18·35
1967	18.30
1968	18·62
1969	19·21
1970	19·33
1971	21·40

Table IV—Deaths from Selected Causes, 1968–71

Causes Coded to 8th Rev. of I.C.D.

Year	Number of deaths			Rate per million of mean population		
	Males	Females	Persons	Males	Females	Persons
Neoplasms (140–239)						
1968	3,565	2,824	6,389	1,619	1,292	1,456
1969	3,592	2,903	6,495	1,597	1,301	1,450
1970	3,828	3,031	6,859	1,666	1,331	1,499
1971	3,834	3,055	6,889	1,661	1,332	1,497
Neoplasms of Trachea, Bronchus and Lung (162)						
1968	959	136	1,095	436	62	250
1969	1,038	146	1,184	462	65	264
1970	1,057	198	1,255	460	87	274
1971	1,064	187	1,251	461	82	272
Ischaemic Heart Disease (410–414)						
1968	7,786	5,196	12,982	3,536	2,377	2,959
1969	7,716	5,025	12,741	3,431	2,253	2,844
1970	7,922	5,311	13,233	3,449	2,331	2,892
1971	7,474	5,322	12,796	3,238	2,320	2,781
Cerebrovascular Disease (430–438)						
1968	2,539	3,543	6,082	1,153	1,621	1,386
1969	2,518	3,387	5,985	1,120	1,518	1,318
1970	2,620	3,700	6,320	1,141	1,624	1,381
1971	2,503	3,699	6,202	1,084	1,613	1,348
Pneumonia (480–486)						
1968	459	407	866	208	186	197
1969	486	392	878	216	176	196
1970	668	567	1,235	291	249	270
1971	516	489	1,005	224	213	218
Bronchitis (490–493)						
1968	1,156	318	1,474	525	145	336
1969	1,160	285	1,445	516	128	323
1970	1,343	333	1,676	585	146	366
1971	1,206	317	1,523	523	138	331
Motor Vehicle Accidents (E810–E823)						
1968	941	324	1,265	427	148	288
1969	903	345	1,248	402	155	279
1970	1,012	363	1,375	441	159	301
1971	986	323	1,309	427	141	285
Accidents other than Motor Vehicle Accidents (E800–E807, E825–E949)						
1968	702	403	1,105	319	184	252
1969	658	367	1,025	293	165	229
1970	654	408	1,062	285	179	232
1971	693	368	1,061	300	160	231

Table V—Causes of Death, New South Wales, 1971

Class	I.C.D. Nos	Cause of death	Number of deaths			Rate per million of mean population		
			Males	Females	Persons	Males	Females	Persons
I	000–136	Infective and parasitic diseases	130	104	234	56	45	51
II	140–239	Neoplasms	3,834	3,055	6,889	1,662	1,332	1,497
III	240–279	Endocrine, nutritional and metabolic diseases	371	500	871	161	218	189
IV	280–289	Diseases of the blood and blood-forming organs	41	56	97	18	24	21
V	290–315	Mental disorders	144	149	293	62	65	64
VI	320–389	Diseases of the nervous system and sense organs	215	188	403	93	82	88
VII	390–458	Diseases of the circulatory system	11,915	11,429	23,344	5,165	4,983	5,074
VIII	460–519	Diseases of the respiratory system	1,925	962	2,887	834	419	628
IX	520–577	Diseases of the digestive system	521	409	930	226	178	202
X	580–629	Diseases of the genito-urinary system	324	405	729	140	177	158
XI	630–678	Complications of pregnancy, childbirth and puerperium	..	15	15	..	7	3
XII	680–709	Diseases of the skin and subcutaneous tissue	10	10	20	4	4	4
XIII	710–738	Diseases of the musculoskeletal system and connective tissue	67	112	179	29	49	39
XIV	740–759	Congenital anomalies	259	209	468	112	91	102
XV	760–779	Certain causes of perinatal morbidity and mortality	555	402	957	241	175	208
XVI	780–796	Symptoms and ill-defined conditions	95	101	196	41	44	43
XVII	E800–E999	Accidents, poisonings and violence (external cause)	2,197	982	3,179	952	428	691
	000–E999	All causes	22,603	19,088	41,691	9,798	8,322	9,062

Table VI—Causes of Death of Infants Under One Year of Age, New South Wales, 1971

I.C.D. Nos	Cause of death	Number of deaths			Rate per 1,000 of live births		
		Males	Females	Persons	Males	Females	Persons
000–136	Infective and parasitic diseases	27	22	49	0·54	0·46	0·50
320	Meningitis, except meningococcal and tuberculous	8	4	12	0·16	0·08	0·12
466	Acute bronchitis and bronchiolitis	5	5	10	0·10	0·10	0·10
480–486	Pneumonia	80	47	127	1·59	0·98	1·29
740–759	Congenital anomalies	196	163	359	3·90	3·38	3·65
760–761	Maternal causes unrelated to pregnancy	24	23	47	0·48	0·48	0·48
762	Toxaemia of pregnancy	21	21	42	0·41	0·44	0·43
764–768	Difficult labour	45	31	76	0·90	0·64	0·77
763, 769	Other complications of pregnancy and childbirth	144	102	246	2·86	2·12	2·50
770, 771	Conditions of placenta and umbilical cord	105	75	180	2·09	1·56	1·83
772	Birth injury without mention of cause	19	8	27	0·38	0·17	0·27
774, 775	Haemolytic disease of new-born	31	9	40	0·62	0·19	0·41
776	Anoxic and hypoxic conditions not elsewhere classified	96	66	162	1·91	1·37	1·65
777	Immaturity, unqualified	55	55	110	1·09	1·14	1·12
773, 778	Residue of certain causes of perinatal morbidity and mortality	13	12	25	0·26	0·25	0·25
Residue of 140–796	All other causes except accidents, poisonings and violence	63	50	113	1·25	1·04	1·15
E800–E999	Accidents, poisonings and violence	45	40	85	0·90	0·83	0·86
	All causes	977	733	1,710	19·43	15·21	17·37

Table VII—Causes of Perinatal *Deaths, New South Wales, 1971

I.C.D. Nos	Cause of death	Number of deaths			Rate per 1,000 of all †hirths		
		Males	Females	Persons	Males	Females	Persons
000–136	Infection of foetus and new-born	9	6	15	0·18	0·12	0·15
480–486	Pneumonia	15	8	23	0·29	0·16	0·23
740–759	Congenital anomalies	164	161	325	3·22	3·30	3·26
760	Chronic circulatory and genito-urinary disease in mother	15	12	27	0·29	0·25	0·27
761	Other maternal conditions unrelated to pregnancy	49	49	98	0·96	1·01	0·98
762	Toxaemias of pregnancy	59	64	123	1·16	1·31	1·23
763	Maternal ante- and intrapartum infection	11	8	19	0·22	0·16	0·19
764–768	Difficult labour	75	49	124	1·47	1·01	1·24
769	Other complications of pregnancy and childbirth	214	144	358	4·20	2·95	3·59
770	Conditions of placenta	288	196	484	5·66	4·02	4·86
771	Conditions of umbilical cord	83	82	165	1·63	1·68	1·66
772, 773	Birth injury without mention of cause	17	10	27	0·33	0·21	0·27
774, 775	Haemolytic disease of new-born	59	30	89	1·16	0·62	0·89
776	Anoxic and hypoxic conditions not elsewhere classified	122	97	219	2·40	1·99	2·20
777	Immaturity, unqualified	66	70	136	1·30	1·44	1·36
778, 779	Other conditions of foetus and new-born	88	79	167	1·73	1·62	1·68
Residue of 140–796	Other diseases of foetus and new-born	22	14	36	0·43	0·29	0·36
E800–E999	External causes of injury to new-born	2	5	7	0·04	0·10	0·07
	All causes	1,358	1,084	2,442	26·68	22·24	24·51

* Foetuses born dead, after completion of at least 20 weeks' gestation, or weighing at least 400 grammes at delivery, and deaths of live-born children within 28 days after birth.

† Live births plus stillbirths.

COMMUNICABLE DISEASES

Notifiable Infectious Diseases Recorded in New South Wales During the Year 1971 Under The Public Health Act, 1902, Cases and Deaths Classified by Health Districts, Compared with 1970 Totals

Health districts	Population 30th June, 1971 (thousands)	Brucellosis		Diphtheria		Hydatid disease		Infantile diarrhoea		Infectious hepatitis		Leptospirosis		Malaria		Ornothosis	
		C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.
Metropolitan	2,015	..	..	11	..	3	..	348	14	671	5	1	..	23	..	..	..
Western Metropolitan	774	1	..	1	..	1	..	157	2	527	3	..	..	2	..	..	..
Newcastle	552	2	..	6	1	2	2	17	8	247	..	1	..	5	..	..	..
South Coast	354	3	..	3	..	5	..	5	2	328	2		..	2	..	1	..
North Coast	161	4	..	1	..	..	..	28	3	47	1	13	..	1	..	..	..
Western	273	5	..	..	..	2	1	18	6	325	2	.	..	3	..	..	..
North Western	166	3	..	..	..	1	..	43	7	119	.	1	..	4	..	..	..
Riverina	254	3	..	..	..	5	3	37	1	332	1	1	..	2	..	..	..
Broken Hill	30	..	..	..	..	..	..	..	..	19	..	..	..	..	..	..	..
Remainder of State	5	..	..	..	..	..	..	14	1	..	..	..	..	..	..	..	..
Total, New South Wales 1971†	4,590	21	Nil	22	1	19	6	667	44	2,615	14	17	Nil	42	Nil	1	Nil
Total, New South Wales 1970	4,567	22	Nil	Nil	Nil	18	2	509	40	2,851	17	19	Nil	69	Nil	3	Nil

Health districts	Paratyphoid fever		Q fever		Tetanus		Tuberculosis			Typhoid fever		Typhus fever		Virus encephalitis	
	C.	D.	C.	D.	C.	D.	New cases	Reacti-vated	D.	C.	D.	C.	D.	C.	D.
Metropolitan	2	..	..	..	4	2	251	36	25	13	..	1	..	5	3
Western Metropolitan	..	..	..	..	..	..	81	8	2	1	..	..	..	4	4
Newcastle	..	..	7	..	..	..	65	8	4	..	..	..	..	6	..
South Coast	..	..	..	..	1	..	37	7	1	1	..	..	..	..	..
North Coast	..	..	..	..	2	..	10	1	1	..	..	1	..	2	1
Western	..	..	1	..	..	..	20	9	1	..	..	..	..	4	2
North Western	..	..	1	..	1	..	11	1	..	..	..	..	..	..	..
Riverina	..	..	..	..	..	..	13	2	..	1	..	..	..	..	..
Broken Hill	..	..	..	..	..	..	2	..	1	..	..	..	..	2	..
Remainder of State	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total, New South Wales 1971	2	Nil	14	Nil	8	2	498*	73*	35	16	Nil	2	Nil	23	10
Total, New South Wales 1970	Nil	Nil	33	Nil	7	2	644	86	64	5	Nil	3	Nil	33	13

The following notifiable infectious diseases were not recorded in 1971

	Totals for 1970	
	C.	D.
Acute anterior poliomyelitis	1	Nil
Anthrax	Nil	Nil
Arbovirus diseases	Nil	Nil
Cholera	Nil	Nil
Leprosy	Nil	Nil
Plague	Nil	Nil
Smallpox	Nil	Nil
Yellow fever	Nil	Nil

* Total cases includes eight imported, one reactivated, all imported and not included in Health District.

† Total includes 6,000 migratory. Items rounded to nearest thousand.

DIVISION OF EPIDEMIOLOGY

Director: S. Fisher, M.D., B.S., B.Sc., F.R.C.P.A.
Deputy Director: W. A. Lopez, M.C., M.B., D.P.H., D.I.H., F.A.C.M.A.
Location: 93 Macquarie Street, Sydney.

FUNCTION

Throughout 1971 the Division continued its previous functions of general epidemiology of infectious diseases and the administration of the Venereal Diseases Act, 1918, as amended.

Proposals have been made for the reorganization of the Division to separate its epidemiological function from its function under the Venereal Diseases Act. With this objective in view a senior medical officer position was created to supervise the clinical and administrative parameters of the two venereal diseases clinics conducted by the Division. The section to be devoted to epidemiology will be separately staffed with medical and field investigator posts to enable non-infective epidemiology studies to be undertaken. The creation of these positions has been delayed due to the present financial stringency, but will be reviewed in 1972.

Additionally, tentative approval was given to a proposal to set-up a regionalized epidemiological data collecting and disseminating service for the State. When this service has been established the scope of the Division's work in epidemiology will be greatly expanded.

EPIDEMIOLOGY

Here the Division is responsible for collection, collation and publication of statistics of infectious diseases proclaimed as notifiable diseases under the Public Health Act, 1902, as amended. In addition to this statistical responsibility the Division provides consultative services on all aspects of the control of communicable diseases whether notifiable or not to hospitals, medical practitioners, medical officers of health, other Divisions of the Department of Health, other Government Departments, and the general public.

During the year it became apparent that up-to-date data on the immunization status of children was necessary as a measure of audit on immunization campaigns conducted by, or sponsored, by the Department.

This data is to be collected by a survey to be carried out by the Bureau of Census and Statistics in conjunction with its regular quarterly work force surveys. The survey on immunization status will be a representative sample covering the whole of the State and will include approximately 4,000 children aged less than 3 years, or between 5 and 7 years. It will be conducted during February and March, 1972. The results should be analysed and available towards the end of that year.

The Division, within its existing resources, has also engaged in general epidemiological surveys. A major project is being carried out in conjunction with Drs G. R. Andrews and E. K. Cullen, Lidcombe State Hospital, in the Western Metropolitan region on "The Social and Medical Needs of Cancer Sufferers". Finance for this project has been granted by the N.S.W. State Cancer Council.

Table 1—General Epidemiology

During 1971, the following infectious diseases were reported under the Public Health Act, 1902, as amended:

	Metropolitan (Included Western Metropolitan Health District)		Rest of State	
	Cases	Deaths	Cases	Deaths
Brucellosis	1	..	20	..
Diphtheria	12	..	10	1
Encephalitis, viral	9	7	13	3
Hydatid disease	4	..	15	6
Infantile Diarrhoea	505	16	162	28
Infectious Hepatitis	*1,198	*8	1,417	6
Leptospirosis	2	..	15	..
Malaria	..	..	..	..
Ornithosis	..	..	1	..
Paratyphoid	2	..	..	..
Q Fever	..	..	14	..
Tetanus	4	2	4	..
Tuberculosis	376	27	195	8
Typhoid Fever	14	..	2	..
Typhus	1	..	1	..
Syphilis (all forms)	339	..	23	..
Gonorrhoea	3,605	..	338	..
Gonorrhoeal Ophthalmia	1	..	..	..
Lymphogranuloma Venereum	4	..	..	..
Chancroid	1	..	..	..

* Including eight cases and two deaths from Serum Hepatitis.

Venereal Disease

As mentioned earlier the Division is responsible for the administration of the Venereal Diseases Act, 1918, as amended. To this purpose it conducts two venereal diseases clinics, one for males and the other for females. The latter clinic was established in 1971 contiguous with the male clinic at 93 Macquarie Street, Sydney. It commenced to function on the 13th September, staffed by a medical officer, nursing sister, and a nursing aide. Although no steps were taken to publicize the establishment of this service attendance has gradually built-up so that by the end of 1971 it was functioning to capacity with attendances averaging 20 per day.

Difficulty was experienced in recruiting a social worker. To overcome this difficulty the position was redesignated to counselling officer, thus opening up the post to graduates orientated towards sociology and psychology. With this reclassification no difficulty was experienced in filling the position.

The Venereal Diseases Section of the Division is now separately supervised, and administered by a senior medical officer. This post was created as portion of the reorganization of the Division during the year, and was filled by Dr G. Hatos, who has been on the staff of the Division since 1960.

A service which has been in existence for many years at the male venereal diseases clinic, viz. the prophylactic clinic was discontinued on 15th October, 1971. The decision to discontinue this service was taken after obtaining advice from leading venereologists overseas, including the consultant specialist of the World Health Organization. The experts unanimously held the view that the value of the type of treatment given in these clinics was never established, and, therefore, continuation of the clinic was no longer justified.

Influenza

The year 1971 was non-epidemic for influenza in N.S.W. The Division participated in the work of an *ad hoc* committee established by the Minister to investigate the high number of deaths for the year 1970 reported by the Bureau of Census and Statistics during 1971.

In all, 344 deaths were attributed to influenza on death certificates, and some 1,235 of pneumonia during 1970.

The peak reporting interval of deaths attributed to influenza was from July through August when 288 death certificates were recorded in which influenza was stated as the primary cause of death as against 42 such certificates for the same period of 1969.

A table setting out deaths attributed to influenza on death certifications in 1970 by statistical divisions of New South Wales, 1970, hereunder:

TABLE 2—DEATHS DUE TO INFLUENZA IN STATISTICAL DIVISIONS* OF NEW SOUTH WALES, 1970†

Statistical Division	Deaths due to Influenza
Sydney	135
Outer Sydney	11
Newcastle Statistical District	42
Balance of Hunter	16
Wollongong Statistical District	6
Balance of Illawarra	3
North Coast	31
Northern	24
Northwestern	31
Central West	23
Southeastern	13
Murrumbidgee	5
Murray	3
Far West	1
Lord Howe Island	..
Total	344

* Statistical Division of usual residence of deceased

† Registered in the calendar year 1970.

Recommendations by the Epidemiology Committee of the National Health and Medical Research Council for vaccination of groups at risk have not been changed since 1970. Vaccination is advised for:

(1) those with certain types of chronic, cardiac and respiratory disease;

(2) those with other illnesses of generally debilitating nature;

(3) those over the age of 65 years.

The number of isolations of influenza virus in metropolitan laboratories between May and September, 1971, was thirteen. Of these two were type A2/Hong Kong/68 and eleven were type B. Serologically diagnosed cases number nine of which one was type A, and eight were type B.

Poliomyelitis

No cases of paralytic poliomyelitis were reported during the year. Sabin vaccine for immunization against poliomyelitis became easier to obtain as in 1971 it was made available to private medical practitioners and some baby health centres, in addition to the health departments of local councils.

Infectious Hepatitis

During the year 2,615 cases and 14 deaths from infectious hepatitis were notified in the State as compared with 2,851 cases and 17 deaths notified in 1970. The general picture presented by the distribution of cases was similar to the previous year without marked seasonal prevalences. The Division was again consulted by school principals, the heads of business organizations, and also by private individuals concerned about small outbreaks and individual cases.

Typhoid Fever

Sixteen cases of typhoid were notified during the year compared to five the previous year. In seven of these cases the infection was acquired overseas; of these two were migrants (one from the Lebanon and one from France); one case was a steward on a passenger liner who had probably been infected in Durban; and the remaining four were Australians returning from overseas trips, and were probably infected in Kabul, Singapore, India, and one of the South Sea islands. Of the remaining nine cases who acquired their infection in New South Wales, the source of infection was traced in one case to an elderly female carrier, who conducted a milk bar in a South Coast resort town. She was prohibited from handling food until her stools became negative for *S. typhi.*

Four cases occurred in personnel working in the laboratories of the Prince Henry Hospital, Little Bay. In three of these cases the disease appears to have been caused by strains of *S. typhi* of identical bacteriophage type. The source of the outbreak could not be identified with certainty, but may have been due to unrefrigerated milk consumed within the laboratory building.

The source of infection of the remaining four cases could not be traced.

Diphtheria

In addition to some sporadic cases occurring mostly in the country, there was an outbreak of diphtheria during the first school term among children attending schools in the Glebe and Newtown areas of Sydney, both suburbs being in the inner Western Metropolitan Area. A total of eleven cases was involved with no deaths. Officers of the Division organized and carried out booster inoculations and primary immunizations in the schools involved of pupils as well as teachers, and performed swabbings to determine the degree of spread of the infection. The immunization status of the pupils was also investigated by a questionnaire to the parents. It became apparent immunization rates tended to be low in children of migrants; children of the less well-to-do, and in areas where local authorities had been less active in this field.

An additional eleven cases of diphtheria occurred apart from the localized outbreak stated above. Distribution is as follows—one in the Western Metropolitan Health District; six cases with one death in the Newcastle Health District; three in the South Coast Health District, and one case in the North Coast Health District. These cases were investigated by the medical officers of health for the respective districts.

Hansen's Disease

On the 31st December, 1971, there were eight patients—four males and four females—under treatment for leprosy as in-patients in the Institute of Tropical Medicine, Little Bay. During the year four cases were admitted to the Institute including a Greek national admitted from a Greek merchant ship; an Aborigine who had recently arrived from Queensland; an English woman who had spent most of her life in Rhodesia and 18 months in the Seychelle Islands, and had recently arrived in Australia, and a Cypriot. There was no case of transmission of leprosy in New South Wales.

During the year four cases were discharged from the Institute of Tropical Medicine. One was repatriated to Greece, and the remaining three were discharged to domiciliary treatment and surveillance. Nineteen cases, which are not considered infectious, are under domiciliary surveillance and treatment. Contacts of all cases are kept under surveillance.

Immunization Against Rubella

The Division conducted an immunization campaign in girls' schools in the second and third forms of high schools, and aimed at girls aged mainly 13 and 14 years. Two teams each consisting of a medical officer and two nursing sisters, immunized girls in schools in the metropolitan areas of Sydney, Newcastle and Wollongong, and in parts of the South Coast, Newcastle and Riverina Health Districts.

This campaign commenced in the middle of February and lasted about 4 months. The teams visited about 230 schools and immunized a total of 44,246 girls, using mainly jet-gun equipment. The overall percentage of those immunized as against the estimated population was about 80 per cent. The campaign ran smoothly; adverse reactions did not exceed the expectation either in severity or incidence. The immunization campaign in the parts of the State which were not covered by the teams was conducted by the medical officers of health in their respective districts. The total number of doses administered in both campaigns was 62,082 given in 475 schools.

VENEREAL DISEASES

In 1971, there was a rise in the number of notifications of gonorrhoea. A total of 3,943 cases was notified compared with 3,497 in the previous year—an increase of 12·6 per cent. The number of cases of gonorrhoea treated in the male clinic also increased by 12·0 per cent. As regards women, the notifications of gonorrhoea rose by 9·3 per cent. Of the notified cases, 12·5 per cent were notified from the Divisional clinic in its $3\frac{1}{2}$ months of functioning.

Three hundred and sixty-two cases of syphilis were notified in 1971, compared with 448 in 1970—a decrease of 19·2 per cent. The changes in the number of notifications for the past 10 years are shown below:

Year	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962
Gonorrhoea notification ..	3,943	3,497	4,010	4,943	4,231	4,445	3,929	3,937	3,625	3,736
Syphilis notification ..	362	448	453	513	606	553	601	399	499	447

The rise in the notifications of gonorrhoea in males follows falls of similar magnitude in the previous 2 or 3 years. Neither the previous falls nor the present rise are interpreted as true fluctuations in the incidence of gonorrhoea, but rather as variations in the rate of notifications, due to unknown factors. It is too early to tell whether the opening of the divisional clinic for females is going to have an effect on sex ratio of notified cases. In 1969, the ratio was 4·3 males to 1 female; in 1970, 4·1 males to 1 female; and in 1971, 4·2 males to 1 female.

Concerning syphilis, the reduction in the number of notifications should not be regarded necessarily as a sign of decreased incidence. Table 3 indicates a definite rise in cases *notified* from the metropolitan area (339 in both sexes in 1971 as against 253 in 1970). The fall in total notifications is due to the application of stricter criteria in including of unnotified cases in the statistics, listed in table 3 in the last row above the totals.

Divisional V.D. Clinic

This clinic is for the diagnosis and treatment of venereal diseases for both sexes. In 1971, of all the cases of venereal disease notified in the whole of New South Wales, more than half (57·2 per cent) of the male cases of gonorrhoea and nearly one-third (30·8 per cent) of the male cases of syphilis were treated at the clinic.

Nine thousand four hundred and sixty-four patients presented themselves at the male clinic for examination during the year, a rise of 11·8 per cent compared with the previous year. Of these one thousand nine hundred and twenty-six (20·4 per cent) were found to be suffering from notifiable venereal disease. This includes one case of chancroid and three cases of L.G.V.

The number of cases of non-gonococcal urethritis (which is not notifiable) treated in the male clinic for the past 3 years are shown below:

	1969	1970	1971
No. of cases of N.G.U.	2,390	2,816	3,292

The total number of attendances at the male clinic was 35,438—about 3,000 fewer than in the previous year. This reduction is probably accounted for by the decrease in the number of attendances for prophylactic treatment (14,075); the out-of-hours function of this unit ceased on 15th October, 1971.

Seven hundred and sixteen seamen were registered during 1971, compared with 753 the previous year.

During the $3\frac{1}{2}$ months at the end of the year, the initial period of the functioning of the clinic for women, 418 patients presented there. The total number of attendances was 917; 94 cases of gonorrhoea and 6 cases of syphilis were diagnosed.

Venereal Diseases Act, 1918, as amended

(a) *Notifications*

Four thousand two hundred and eighty-four notifications of venereal disease were received during the year.

Notification of venereal disease by private practitioners is still low as far as gonorrhoea is concerned (20·8 per cent), but private practitioners were responsible for 47·5 per cent of syphilis notifications.

(b) *Notification Rates*

The crude notification rates per 100,000 mean population for gonorrhoea and syphilis for the metropolitan area, and the whole of the State, for the past 3 years are shown below:

	1969	1970	1971
Gonorrhoea—			
Sydney metropolitan area	133	126	131
Whole State	90	77	74
Syphilis—			
Sydney metropolitan area	15	16	12
Whole State	10	10	8

The age and sex specific notification rates per 100,000 population:

	1969		1970		1971	
	M	F	M	F	M	F
Gonorrhoea:						
15–19	305	150	234	126	278	129
20–24	680	149	572	150	621	152
25–29	383	59	335	47	383	62
Syphilis:						
15–19	7	5	7	4	5	4
20–24	27	11	37	13	37	8
25–29	35	24	37	12	46	3

(c) *Notification of Default* (*Section* 10)

Seven hundred and fifty-nine defaulters were notified from the Metropolitan Health Districts. Of these, three hundred and seventy-three (49·1 per cent) remained in default.

(d) *Prosecutions* (*Section 5—Failure to continue treatment*)

Summonses were issued against 487 persons compared with 483 in 1970, all in the metropolitan area. All but 2 of the cases were dismissed after a warning and promise to complete treatment.

Warrants for arrest were issued in two cases, but these were subsequently withdrawn after some months as the patients had not been traced.

(e) *Contact Tracing*

All notifications of venereal disease (on form B, section 9, Regulation 7) should include the name and address of the person from whom the infection was probably contracted.

Reference has been made to the difficulties experienced in obtaining staff for the tracing of contacts and related duties. The work was nevertheless pursued actively and successfully. Immediate utilization of the facilities provided by the clinic for women resulted largely from referrals of contacts of male patients of the clinic by the social worker and the counselling officer.

Gonorrhoea

Three thousand nine hundred and forty-three cases were recorded during 1971, an increase of 12·8 per cent from the previous year. Three thousand six hundred and five cases (91·4 per cent) were from the Sydney metropolitan area. 20·8 per cent of notifications were from private practitioners. The sex ratio of cases was 4·2 males to 1 female.

Proportion of cases of gonorrhoea in males and females in the age group 15–19 for the past 3 years:

	1969 Per cent	1970 Per cent	1971 Per cent
Males	18·6	18·4	17·4
Females	37·3	35·3	33·1

Syphilis

Three hundred and sixty-two cases were recorded of which two hundred and twelve (58·6 per cent) were in an early infectious stage. The total for the year was eighty-six less than for 1970, a decrease of 19·1 per cent. As mentioned above, this decrease is probably apparent rather than real and caused by excluding from the statistics certain cases which had not been notified. Three hundred and thirty-nine cases (93·9 per cent) were from the Sydney metropolitan area; 47·5 per cent of notifications were from private practitioners. The sex ratio of cases was 6·2 males to 1 female.

Proportion of cases of syphilis in males and females in the age group 15–19 for the past 3 years:

	1969 Per cent	1970 Per cent	1971 Per cent
Males	4·3	4·7	3·2
Females	6·1	7·2	16·0

TABLE 3

(Figures for 1970 are shown in brackets)

Source of report	Gonorrhoea				Syphilis			
	Male		Female		Male		Female	
Navy	3	(33)	..	(..)	..	(1)	..	(..)
Army	32	(36)	..	(..)	1	(2)	..	(..)
Air Force	..	(3)	..	(..)	..	(1)	..	(..)
Metropolitan H.D.—								
Private Practitioners	618	(393)	66	(64)	150	(49)	10	(6)
Hospitals	386	(357)	521	(578)	46	(45)	25	(37)
Divisional Clinic	1,826	(1,630)	94	(..)	96	(109)	6	(..)
Western Metropolitan H.D.—								
Private Practitioners	17	(16)	5	(5)	3	(2)	..	(2)
Hospitals	30	(66)	7	(11)	2	(2)	..	(1)
Newcastle H.D.—								
Private Practitioners	27	(30)	3	(3)	1	(2)	..	(1)
Hospitals	118	(96)	28	(9)	..	(4)	..	(2)
South Coast H.D.—								
Private Practitioners	28	(25)	2	(6)	..	(..)	..	(..)
Hospitals	40	(24)	6	(1)	2	(1)	1	(..)
North Coast H.D.—								
Private Practitioners	9	(20)	..	(4)	..	(..)	2	(..)
Hospitals	..	(..)	..	(..)	..	(..)	..	(..)
North Western H.D.—								
Private Practitioners	19	(32)	4	(4)	..	(..)	..	(2)
Hospitals	5	(2)	1	(..)	..	(..)	..	(..)
Western H.D.—								
Private Practitioners	7	(14)	3	(..)	2	(1)	4	(..)
Hospitals	..	(..)	..	(..)	8	(..)	..	(..)
Riverina H.D.—								
Private Practitioners	10	(19)	5	(3)	..	(..)	2	(..)
Hospitals	15	(5)	7	(..)	1	(1)	..	(..)
Broken Hill (City only)—								
Private Practitioners	..	(1)	..	(..)	..	(..)	..	(..)
Hospitals	1	(2)	..	(..)	..	(..)	..	(..)
Remainder of State—								
Private Practitioners	..	(3)	..	(..)	..	(..)	..	(..)
Hospitals	..	(1)	..	(..)	..	(..)	..	(..)
Diagnosed in Division but not notified	..	(1)	..	(..)	..	(117)	..	(60)
Total	3,191	(2,809)	752	(688)	312	(337)	50	(111)

Table 4—Cases of Venereal Disease Notified During 1971 By Disease, Age and Sex

	0–14		15–19		20–24		25–29		30–39		40–49		50–59		60–69		70 and over		Age not stated		Totals		Gra d total
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
Gonorrhoea	*2	**34	554	249	1,164	293	680	101	555	59	147	14	36	9	5	2	1	..	31	7	3,175	768	3,943
Syphilis	..	1	10	8	75	16	82	5	92	10	40	7	10	..	3	2	..	1	..	..	312	50	362
Chancroid	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Lymphogranuloma venereum	..	..	..	..	..	..	3	..	..	..	1	..	..	..	..	..	..	..	..	..	4	..	4
Granuloma inguinale	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Gonorrhoeal ophthalmia	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Totals	2	36	564	257	1,239	309	766	106	647	69	188	21	46	9	8	4	1	1	31	7	3,492	819	4,311

* In this total were 1 aged 13 and 1 aged 14.

** In this total were one aged 3, one aged 4, two aged 9, one aged 12, twelve aged 13 and seventeen aged 14 years. One female syphilis patient was aged 3 months.

Table 5—Syphilis: Age—Sex Grouping By Stage of Disease—1971

	0–14		15–19		20–24		25–29		30–39		40–49		50–59		60–69		70 and over		Age not stated		Totals		Grand total
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
Primary	..	..	6	..	32	4	40	..	33	1	19	1	1	..	..	..	..	..	..	..	131	6	137
Secondary	..	..	4	4	20	3	14	1	21	1	5	..	1	..	..	1	..	..	..	..	65	10	75
Latent 1st year	..	..	..	..	8	4	6	1	12	1	6	2	2	..	..	..	..	..	..	..	34	8	42
Cardio vascular	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
C.N.S.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
All other latent	..	..	..	4	15	5	22	3	26	7	10	4	6	..	3	1	..	1	..	..	82	25	107
Congenital under 1 year of age	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Congenital over 1 year of age	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Totals	..	1	10	8	75	16	82	5	92	10	40	7	10	..	3	2	..	1	..	..	312	50	362

TUBERCULOSIS DIVISION

Annual Report for Period Ending 31st December, 1971

Director: K. W. H. Harris, E.D., M.B., B.S., D.P.H., F.A.C.M.A., F.C.C.P.

Location: 86–88 George Street North (Headquarters). Chest X-ray Centre, 697 George Street West (X-ray Clinic)

Function: During the preceding months negotiations were concluded through the Department of Health and the Anti-Tuberculosis Association of N.S.W. which resulted in a rationalization of the mass X-ray services and other functions of the latter association which commenced to take effect from 1st July, 1971.

The results of these negotiations were that although the Department retained the overall planning of mass surveys the actual conducting of the surveys was now left completely in the hands of the association. Since that date the Association's Chest Clinic has gradually been transferring its patients to other clinics so that by 1st July, 1972, the clinic will cease to function as such.

In the latter part of 1971 an organization and methods survey was commenced. The terms of the reference of the survey were contained in a submission to the Director General of Public Health and the Under Secretary dated 3rd June, 1971. These terms are as follows:

(i) To review and report on the existing structure and organization of tuberculosis services within the Department including the Division of Tuberculosis and its branches; the Randwick Chest Hospital; the tuberculosis services within psychiatric hospitals; laboratory services assisting in the diagnosis and treatment of tuberculosis, and the role and relevance of the clinics including that which is proposed to be conducted by the Tuberculosis Division in lieu of 697 George Street.

(ii) With relevance to this review to consider not only the structure of the organization, but the philosophies and policies laid down both locally and centrally by the Tuberculosis Advisory Council.

(iii) Obtain information on the future of the Anti-Tuberculosis Campaign in this State and the degree to which the campaign will be supported, as in the past, by the Commonwealth Government.

(iv) Consider the need for a separate organization within the Division of Establishments. Define the function of the units of this organization and particularly the Randwick Chest Hospital and advise on any reconstructuring towards a unified system under the administration of the Director of Tuberculosis.

(v) Determine the distribution and function of existing chest clinics associated with the general hospitals and advise on the role of these clinics as now existing and in the future for the diagnosis, follow up and treatment within the concept of regional health services.

It is expected that this survey will conclude in the early parts of 1972. Beyond the above no changes in policy nor functions of the Division have occurred in the 12-month period.

NOTIFICATION OF TUBERCULOSIS

There was a further decrease, a marked one, in notification for new, active and probably active cases of tuberculosis for 1971, (498) as compared with 1970, (644). In addition a decrease was noted in reactivated cases for 1971, (73) as compared with 1970, (86) but this is still higher than for 1969, (55). As previously usually most of the reactivated groups come from patients from the prechemotherapeutic era, or if later, have a history of inadequate treatment. There were 70 cases of non-pulmonary tuberculosis. Included in these figures were 12 cases of atypical disease of which 2 were non-pulmonary which was a decrease from 25 and 14 respectively for 1970.

Details by age, sex and type of tuberculosis and stage of disease are set out in tables I, II and III.

INCIDENCE OF TUBERCULOSIS

The population for New South Wales at 31st December, 1971, was 4,641,000. The rate per 100,000 for all categories new and reactivated is 12·30; for new cases 10·73; for pulmonary disease 9·22; for non-pulmonary disease 1·51; and for reactivated cases 1·57. The overall figures for the above categories, new, active, probably active and reactivated cases decreased from 730 to 571. This can be compared with rates per 100,000 since 1950 as shown in figure 1. The mortality rates for the same period also shown in a later section of this report have decreased. With regard to the total rate for notifications the key years in the tuberculosis campaign would be 55·96 in 1950 the date of the commencement of the New South Wales State Campaign against Tuberculosis 62·88 in 1954, the highest rate in relation to case finding activities and 12·30 in 1970 (the lowest rate and includes reactivations). This decrease is as expected and must be regarded as resulting from the carrying out of controlled measures planned and adopted throughout the campaign.

Table I—Notifications of Tuberculosis for 1971 Showing Sex, Age and Form

Age group	Males			Females			Persons			Total	Percentage
	Pulmonary Tuberculosis	Non-Pulmonary Tuberculosis	Re-activated	Pulmonary Tuberculosis	Non-Pulmonary Tuberculosis	Re-activated	Pulmonary tuberculosis	Non-pulmonary tuberculosis	Re-activated		
0–4	4	..	..	1	6	..	5	6	..	11	1·9
5–9	2	3	..	..	3	..	2	6	..	8	1·4
10–14	1	..	..	..	..	..	1	..	..	1	0·2
15–19	3	3	..	5	..	..	8	3	..	11	1·9
20–24	7	2	..	7	2	..	14	4	..	18	3·2
25–29	11	1	..	7	3	..	18	4	..	22	3·8
30–34	19	3	1	9	4	..	28	7	1	36	6·3
35–39	19	5	1	11	4	..	30	9	1	40	7·0
40–44	26	1	3	11	2	1	37	3	4	44	7·7
45–49	30	4	7	15	1	6	45	5	13	63	11·0
50–54	31	2	5	14	3	3	45	5	8	58	10·2
55–59	40	4	4	9	..	..	49	4	4	57	10·0
60–64	38	2	8	9	..	3	47	2	9	58	10·2
65–69	25	2	10	9	1	1	34	3	13	50	8·8
70–74	19	2	11	10	2	1	29	4	12	45	7·9
75–	31	1	7	5	1	1	36	2	8	46	8·0
Not stated	..	2	..	..	1	..	..	3	..	3	0·5
Total	306	37	57	122	33	16	428	70	73	571	100·0
Percentage ..	53·6	6·5	10·0	21·4	5·8	2·8	75·0	12·3	12·7	..	100·0

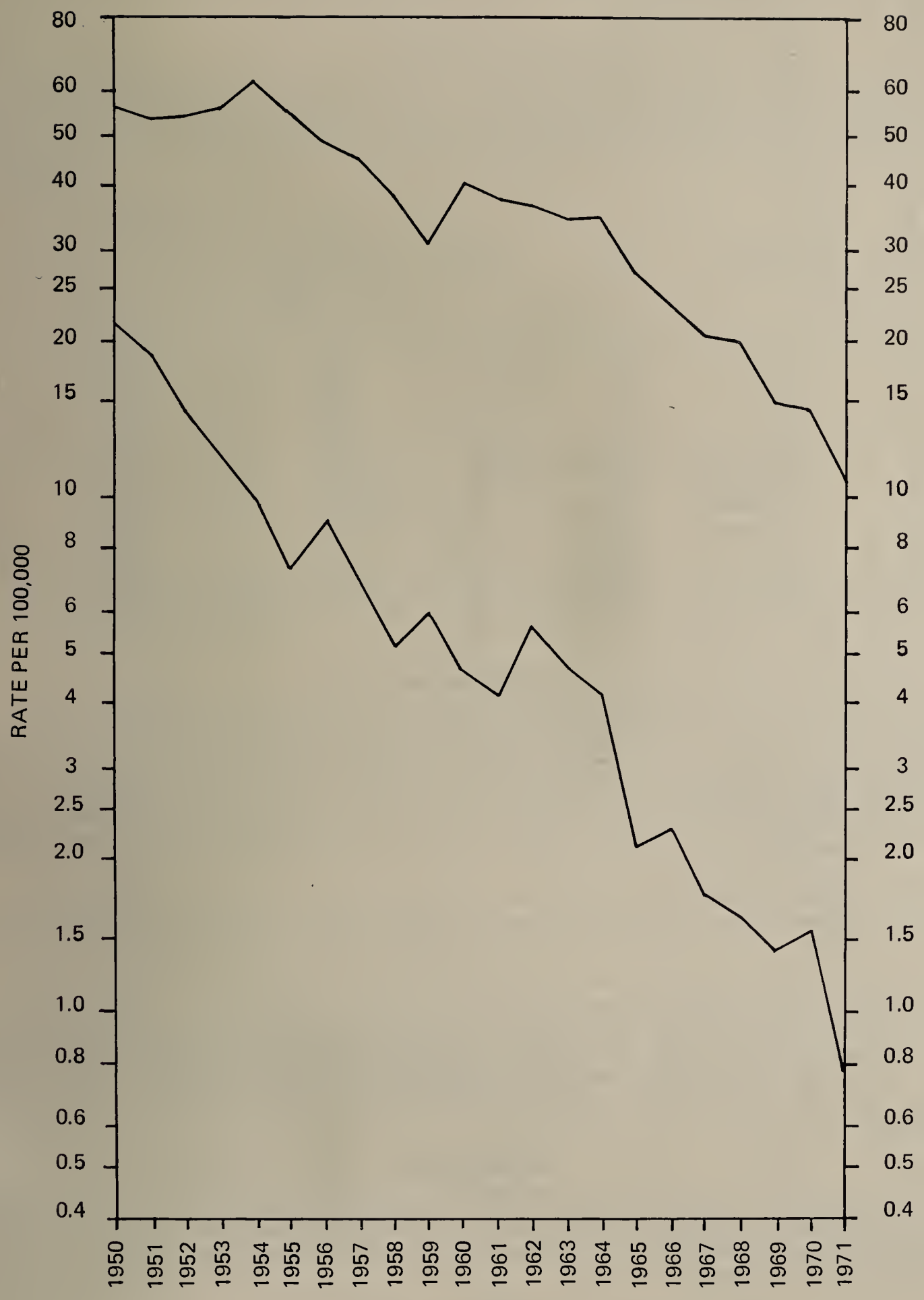
Table II—Comparison or Form and/or Stage of Disease for 1971 as Compared with Preceding Years

Form and/or stage of disease	1961		1962		1963		1964		1965		1966		1967		1968		1969		1970		1971	
	Cases	Percentage of total notifications	Cases	Percentage of total notifications	Cases	Percentage of total notifications	Cases	Percentage of total notifications	Cases	Percentage of total notifications	Cases	Percentage of total notifications	Cases	Percentage of total notifications	Cases	Percentage of total notifications	Cases	Percentage of total notifications	Cases	Percentage of total notifications	Cases	Percentage of total notifications
Primary	10	0·6	10	0·6	17	1·2	10	0·7	17	1·5	21	2·1	19	2·3	24	2·7	17	2·31	16	2·2	7	1·2
Minimal	493	33·9	552	37·8	380	27·7	346	74·7	274	24·4	169	17·5	178	19·0	191	20·7	114	15·68	146	20·0	146	25·6
Moderately advanced	622	42·8	526	36·0	491	35·7	527	37·6	568	50·5	520	53·9	468	50·0	437	47·4	356	49·08	292	40·0	262	45·8
Advanced	132	9·1	117	8·0	99	7·2	157	11·2	77	6·9	96	10·0	85	9·0	74	8·0	82	11·01	81	11·1	74	13·0
Pleural effusion	29	2·0	36	2·5	28	2·0	51	3·6	18	1·6	20	2·1	28	2·9	21	2·3	24	3·29	23	3·1	10	1·8
Extra pulmonary	90	6·2	113	7·8	70	5·1	88	6·3	73	6·5	84	8·7	75	8·0	103	11·1	77	10·56	86	11·8	72	12·6
Death certificate	79	5·4	106	7·3	74	5·4	71	5·05	*	*	5	0·5	..	..	..	..	*	*	*	..	*	..
Reactivated	..	..	..	..	142	10·3	113	8·05	97	8·6	50	5·2	83	8·8	72	7·8	55	7·55	86	11·8	*	..
Quiescent	..	..	..	..	67	4·9	35	2·5	*	*	*	*	*	*	*	*	..	..	..	..	*	..
Atypical	..	..	..	..	7	0·5	4	0·3	*	*	*	*	*	*	*	*	*	*	*	*	*	..
Not stated	..	..	..	..	†	..	†	..	†	..	†	..	†	..	†	..	†	0·52	†	..	†	..
Total	1,455	100·00	1,460	100·00	1,375	100·00	1,402	100·00	1,124	100·00	965	100·00	936	100·00	922	100·00	725	100·00	730	100·00	571	100·00

† This includes reactivated figure.

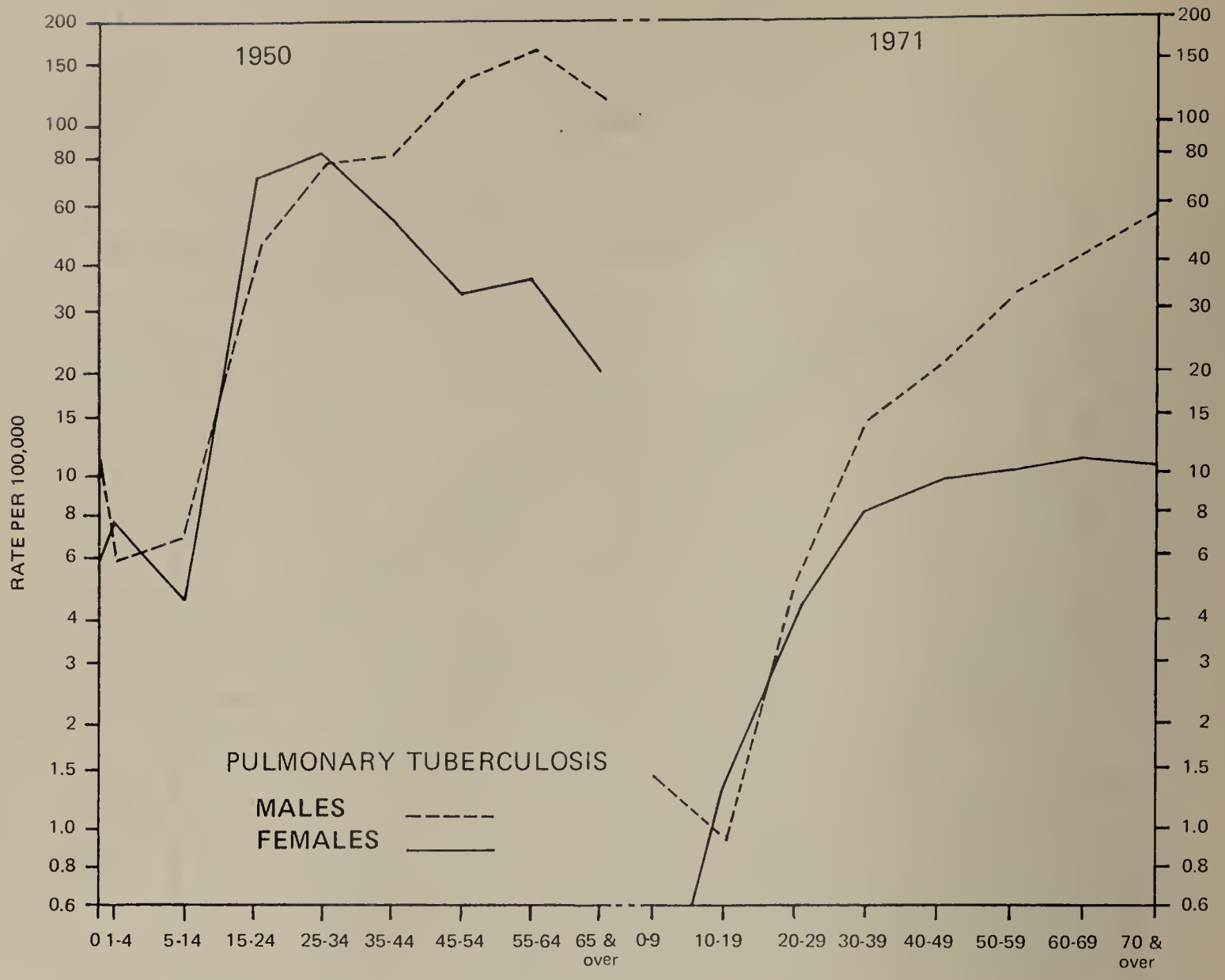
* Included in other headings.

Figure I



TUBERCULOSIS New Cases—Upper Curve
Deaths—Lower Curve

Figure II



The non-pulmonary notifications can be dissected as follows:

NON-PULMONARY CASES—1971

Genito-urinary	35
Bone and joint	10
Glandular	18
Meningeal	3
Mediastinal gland	..
Miliary	4
Breast abscess	1
Spleen	1
	72

An equal number of males and females, each thirty-six, were found to have non-pulmonary disease. Of the total, thirty-eight were born in Australia and thirty-four outside Australia. As in previous years the genito-urinary, glandular and bone joint disease comprise the majority of notifications.

Mortality Rate

A decrease from 1·40 to 0·75 per 100,000 has occurred during the year 1971. The table below gives a dissection of causes of death from tuberculosis by type and sex. As in previous years the majority of deaths were in the over 50 age group—a total of twenty-nine fall into this bracket, the youngest death was aged 34.

		Male	Female	Total
0109	Pneumoconicsis and tuberculosis	2	..	2
0119	Pulmonary tuberculosis	14	2	16
0130	Tuberculosis of Meninges and C.N.S.	1	..	1
0189	Disseminated	1	1	2
0190	Late effects of tuberculosis	11	3	14
	Total	29	6	35

A decrease was shown in male deaths from fifty to twenty-nine. From the total of thirty-five (both cases) fourteen were shown to be due to the late effects of tuberculosis as compared with thirty-three in 1970. As in previous years, cases have been excluded where the patient's cause of death was not related directly or indirectly to tuberculosis.

Two graphic representations (figures 2 and 3) demonstrate the Age-Specific Notifications for pulmonary tuberculosis for the years 1971 and 1950 respectively.

Age and Sex

The incidence of new active cases of tuberculosis was highest in the age group 45 and above—comprising approximately 62·3 per cent of the total notifications as compared with 55 per cent in 1970. The ratio of tuberculosis patients, male to female, increased for female in 1971, being 1 : 0·45 as compared with 1 : 0·37 in 1970. The sex ratios for tuberculosis male to female from 1958 inclusive are as under:

Year	Total Notifications (including reactivations)*	Total Males	Total Females	Ratio Male to Female
1958	1,399	959	440	1 : 0·46
1959	1,166	799	377	1 : 0·48
1960	1,533	1,068	465	1 : 0·45
1961	1,455	1,041	414	1 : 0·40
1962	1,460	1,040	420	1 : 0·40
1963	1,375*	963	412	1 : 0·43
1964	1,402*	951	451	1 : 0·47
1965	1,124*	821	303	1 : 0·36
1966	965*	673	292	1 : 0·43
1967	936*	681	259	1 : 0·37
1968	922*	660	262	1 : 0·40
1969	725*	514	211	1 : 0·40
1970	730*	537	193	1 : 0·36
1971	571*	400	171	1 : 0·45

Stage of Disease

Total numbers of notifications for all stages of disease decreased when compared with 1970. However, the percentage of primary disease 1·2 per cent (2·2 per cent), pleurisy with effusion 1·7 per cent (3·1 per cent), moderately advanced 38·5 per cent (40 per cent), advanced 10 per cent (11·1 per cent), decreased when compared with the preceding years; and minimal 23·5 per cent (20 per cent), non-pulmonary 12·3 per cent (11·8 per cent); reactivated 12·8 per cent (11·8 per cent) showed a slight increase. The figures for 1970 are shown in brackets. The breakdown of the various sources of discovery are shown in table III.

As in 1970 the greater source of notifications came from chest clinics 25·3 per cent in 1971 as compared with 27·4 per cent in 1970. Private medical practitioners were responsible for 25·3 per cent in 1971 as compared with 22·7 per cent in 1970.

Mass community surveys were responsible for 21·6 per cent of the notifications, a decrease from 26·1 per cent in 1970. On the other hand, an increase was noted from 10 per cent in 1970 to 15 per cent in 1971 from general hospitals, and from 0·6 per cent to 2 per cent from death certificates. No other significant changes occurred in the source.

TABLE III

Source 1971	Pulmonary Cases		Non-Pulmonary Cases		Total Cases
	No.	per cent	No.	per cent	
Mass Community Surveys—					
Health Department	38	7·6	..	..	38
A.T.A.	70	14·0	..	..	70
Private Medical Practioners—					
Direct	46	9·2	26	36·1	72
Via Chest Clinic	70	14·0	10	13·8	80
General Hospitals	75	15·0	29	40·5	104
Chest Hospitals, Annexes and Sanatoria	12	2·4	2	2·7	14
Chest Clinics	126	25·3	1	1·4	127
Repatriation Clinics and Hospitals	29	5·8	2	2·7	31
Death Certificate	10	2·1	..	..	10
Special Groups—					
(a) Mental Hospital Surveys	14	2·8	1	1·4	15
(b) Gaol Surveys	1	0·2	..	..	1
(c) Ante-Natal Hospitals	2	0·4	..	..	2
(d) Other	6	1·2	1	1·4	7

Migrants

The total number of migrants notified during 1971 was 172. As is customary these notifications do not include reactivations nor cases notified by death certificate. Migrant proportion of the total notification is 35·25 per cent in 1971 as compared with 35·8 per cent in 1970. Of the 172 migrant notifications, 29 were notified within 1 year of arrival; 38 were notified within 1 to 5 years of arrival; and 105 were notified over 5 years after arrival. The increase of notifications within 1 year of arrival should be emphasized. The country of origin is as follows:

Country of Birth	Period of Residence in Australia			
	Under 1 year	1-5 years	Over 5 years	Total
Brazil	1	1	..	2
Ceylon	..	..	..	..
China	1	1	3	5
Cyprus	..	..	..	..
Eire	1	1	5	7
Estonia	..	..	1	1
Finland	..	..	1	1
France	1	..	..	1
Germany	1	3	4	8
Greece	..	..	6	6
Hungary	..	..	6	6
India	1	1	1	3
Indonesia	1	..	1	2
Iraq	..	1	..	1
Italy	1	4	11	16
Jordan	..	..	1	1
Korea	..	1	..	1
Latvia	..	..	3	3
Lebanon	..	2	1	3
Lithuania	1	..	..	1
Malaya	..	..	1	1
Malta	..	..	2	2
Netherlands	..	..	2	2
New Zealand	3	1	4	8
Pakistan	..	..	1	1
Philippines	2	1	..	3
Poland	1	..	3	4
Portugal	..	4	..	4
Russia	..	..	2	2
Spain	1	..	1	2
Turkey	2	1	..	3
U.A.R. Egypt	..	1	1	2
United Kingdom	3	7	36	46
Yugoslavia	8	8	8	24
	29	38	105	172

As previously, it was reported that the total notifications was 35·25 per cent in 1971. This should be contrasted with the total per cent of distribution of migrants in New South Wales as at 30th June, 1966, or 17·34 per cent.

TUBERCULOSIS ALLOWANCE

The number of cases receiving the Tuberculosis Allowance as at the 31st December, 1971, showed a decrease when compared with 1970—137 compared with 168. From these, in 1971, 108 were males and 29 females, 65 receiving treatment in an institution and 72 home treatment.

As in 1970 there was a further reduction of patients who have been in receipt of the allowance for a lengthy period. This is related to the lessened number of chronic positive cases. Table IV illustrates the foregoing figures.

TABLE IV—PERSONS RECEIVING THE TUBERCULOSIS ALLOWANCE IN NEW SOUTH WALES AS AT 31ST DECEMBER, 1971

Location of Patients

Receiving Treatment in Institution			Receiving Treatment Outside Institution			Total Persons Receiving Treatment		
Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
57	8	65	51	21	72	108	29	137

Period in Receipt of Allowance

Period	1970			1971		
	Males	Females	Persons	Males	Females	Persons
Under 1 year	116	18	134	89	24	113
1–2 years	16	2	18	10	3	13
2–3 years	8	..	8	1	1	2
3–4 years	2	..	2	3	1	4
4–5 years	1	..	1	..	..	..
Over 5 years	5	..	5	5	..	5
Totals	148	20	168	108	29	137

Housing

During 1971, seven applications were received and seven nominations by the Tuberculosis Housing Committee for "out of priority" housing were forwarded to the Housing Commission of New South Wales. Of these one was allocated housing, four not approved and no decision has yet been reached in the case of two.

Two applications were still pending at the end of 1970, one of which was not approved and no decision reached in the second.

Reasons for rejection by the Housing Commission were:

1970	No reason given	1
1971	Financial grounds	2
	Application withdrawn	2

RADIOLOGICAL SURVEYS

Community mass miniature radiological surveys were carried out by the Tuberculosis Division and the Anti-Tuberculosis Association of New South Wales. As a result of the rationalization procedures carried out, the Tuberculosis Division ceased to take mass X-rays as from 1st July, 1971. The relevant statistics from each organization will come later in the report.

Statistics as a total for all facets of the radiography campaign are given in table V. A detailed summary of results is given in table Va.

Table V—X-ray Campaigns in New South Wales

Number X-rayed—all ages	excluding	*Psychiatric Hospitals*
558,645		14,510

The above figures resulted from the following:

- M.M.R. surveys carried out by the Tuberculosis Division and the Anti-Tuberculosis Association of New South Wales.
- X-rays at the divisional chest X-ray centre.
- X-rays at the Anti-Tuberculosis Association Chest Clinic.
- Routine miniature X-rays at metropolitan and country hospitals.
- Special surveys on selected groups in the community by—
  - (a) the Tuberculosis Division;
  - (b) the Anti-Tuberculosis Association of New South Wales.
- The Anti-Tuberculosis Association of New South Wales 70 mm unit at Sydney Hospital.
- Miniature X-ray units installed in psychiatric hospitals.
- Mobile surveys of psychiatric hospitals.

X–rays — excluding Psychiatric Hospitals

Age	Number	Active and probably Active	Rate per 1,000	Inactive	Rate per 1,000	Other abnormalities	Rate per 1,000
Under 15 ..	..	..	..	..	..	..	..
15–19 ..	..	6	..	16	..	34	..
20–24 ..	..	6	..	13	..	88	..
25–29 ..	..	14	..	18	..	61	..
30–34 ..	..	12	..	29	..	49	..
35–39 ..	..	11	..	34	..	55	..
40–44 ..	..	12	..	36	..	70	..
45–49 ..	..	12	..	37	..	114	..
50–54 ..	..	13	..	44	..	119	..
55–59 ..	..	8	..	32	..	142	..
60–64 ..	..	11	..	40	..	135	..
65–69 ..	..	10	..	28	..	107	..
70–74 ..	..	5	..	10	..	99	..
75 and over ..	..	11		31		108	
Not stated ..	..	..	..	2	..	9	..
Totals	558,645	131	0·23	370	0·66	1,190	2·13

Table VA shows a summary of results of X-rays from all sources broken down by source.

TABLE VA

Type of Survey	Total X-rayed	Number active and probably active tuberculosis	Rate per 1,000	Inactive tuberculosis cases	Rate per 1,000	Other significant conditions
M.M.R. TB. Div. Metro.	50,401	5	0.10	36	0.71	84
M.M.R. A.T.A. Metro.	215,135	26	0.12	23	0.11	332
M.M.R. TB. Division—Country ..	29,088	8	0.28	14	0.48	50
M.M.R. A.T.A. Country	105,732	10	0.09	16	0.15	222
Routine Hospital X-rays—Metro.*..	37,774	38	1.01	132	3.49	183
Routine Hospital X-rays—Country**	1,914	1	0.52	39	20.3	10
Chest X-ray Centre	34,864	13	0.37	79	2.27	63
A.T.A. Clinic	14,758	16	1.1	10	0.68	157
Special Surveys TB. Division ..	6,956	2	0.37	7	1.00	5
Special Surveys A.T.A.	32,425	1	0.03	3	0.09	35
A.T.A. Sydney Hospital	27,615	7	0.25	4	0.14	47
Total	556,662	127	0.23	363	0.652	1,188
Psychiatric Hospitals—						
Miniature Units	4,100	2	0.49	2	0.49	2
Mobile Unit	10,410	11	1.06	74	7.10	74
Total	14,510	13	0.90	76	5.24	76
Long Bay Unit	1,607	3	1.87	7	4.36	2
Mobile Surveys Gaol	376	1	2.66	..	..	..
Total	1,983	4	2.02	7	3.53	2
*Clinic Patients in Addition ..	12,060	..	..	..	..	..
**Clinic Patients in Addition ..	3,046	..	..	..	..	..
Total less * and **	573,155	144	0.25	446	0.78	1,266

PSYCHIATRIC HOSPITAL SURVEYS

(From both mobile and 70 mm units installed in hospitals)

Mobile Unit 10,410
Fixed 70 mm Units .. .. 4,100 } 14,510

Age	Number	Active and probably active	Rate per 1,000	Inactive	Rate per 1,000	Other abnormalities	Rate per 1,000
All Ages ..	14,510	13	0·90	76	5·24	76	5·24

Also please see Table VA—(before Table VI)

TABLE VI—SUMMARY OF X-RAYS TAKEN BY TUBERCULOSIS DIVISION FOR THE YEAR ENDING 31ST DECEMBER, 1971

	Total Number of persons X-rayed	Number of persons X-rayed on large films	Percentage	Number of Technical faults	Percentage	Cases of active Tuberculosis	Cases per 1000 micro films	Cases of Inactive Tuberculosis	Other Abnormalities	Cases under investigation	Number of persons referred to a Clinic for regular follow up
Metropolitan	50,401	203	0·43	12	0·02	5	0·10	36	509	9	58
Country	29,088	152	0·52	62	0·21	8	0·28	14	663	2	29
Total M.M.R.	79,489	355	0·45	74	0·09	13	0·16	50	1,172	11	87
Chest X-ray Centre	34,864	269	0·77	62	0·18	13	0·37	79	566	10	108
Special Surveys	6,956	19	0·29	2	0·03	2	0·29	7	30	..	6
Psychiatric Hospitals	990	5	0·51	..	..	1	1·01	2	12	..	2

Radiological Surveys—Division of Tuberculosis

Statistics for this activity of the Division are shown in table VI. These activities are reported under the following headings:

A. Mass miniature surveys.

B. The Chest X-ray Centre.

C. Special surveys.

A. MASS MINIATURE SURVEYS

As the result of the rationalization of M.M.R. surveys, after 30th June, 1971, no further surveys of this type were carried out by the Tuberculosis Division.

During the year 1971 the following areas were visited:

Country
City of Orange.
Municipalities of Cowra, and Forbes.
Shires of Waugoola, Molong, Jemalong, and Boree.

Metropolitan
Shire of Sutherland.

The number of X-rays taken were 50,401 in the metropolitan area resulting in 5 active and 36 inactive tuberculosis cases at a rate per 1,000 of 0·10 and 0·71 respectively. In addition 84 other significant conditions were found. This shows a further reduction when compared with the 1970 figure and is related to the planned lessening of the tempo of such surveys.

B. CHEST X-RAY CENTRE

A total of 34,864 persons attended for chest X-rays during the year, which number was less than the total number X-rayed at this site during 1970, 37,037.

Thirteen cases of active tuberculosis were discovered in this group representing 0·37 cases per 1,000 X-rayed; also seventy-nine cases of inactive tuberculosis were found, at a rate of 2·27. In addition sixty-three cases were found to have other significant conditions.

C. SPECIAL SURVEYS

A total of 6,956 persons were X-rayed as a result of special surveys carried out up till 30th June, 1971, which included homes for the aged, convalescent homes, etc. These surveys produced 2 active and 7 inactive cases of tuberculosis, at a rate of 0·37 and 1·00 per 1,000 respectively. The reason for the reduced numbers surveyed was also related to the programme of rationalization.

Radiological Surveys—Anti-Tuberculosis Association of New South Wales

A. MASS SURVEYS

Statistics of mass radiological surveys conducted by this organization are given in table VII.

TABLE VII—MASS RADIOLOGICAL SURVEYS—THE ANTI-TUBERCULOSIS ASSOCIATION OF NEW SOUTH WALES

Area	Total No. of X-rays	Active probably active Tuberculosis	Rate per 1,000	Inactive Tuberculosis	Rate per 1,000	Other conditions	Rate per 1,000
Metropolitan ..	215,135	26	0·12	23	0·11	332	1·54
Country ..	105,732	10	0·09	16	0·15	222	2·10

The Metropolitan and Country Health Districts covered by these services were as follows:

Western Metropolitan Health District

Electorates of Fairfield,
Merrylands, and
Liverpool.

Metropolitan Health District

Electorates of Georges River,
Hurstville,
Kogarah,
Rockdale,
Marrickville, and
East Hills.

Newcastle Health District

Electorates of Lake Macquarie,
Cessnock,
Raleigh,
Oxley, and
Maitland.

The statistics relating to each of these Health Districts will be found in the corresponding part of this report following.

B. SPECIAL SURVEYS

The special surveys carried out by the Anti-Tuberculosis Association showed the lowest yield from all sources of case finding. Out of a total of 32,425 people X-rayed only 1 case of active and 3 cases of inactive tuberculosis were found at a respective rate per 1,000 of 0·03 and 0·09. In addition 35 other significant conditions were discovered at a rate of 1·1.

C. ANTI-TUBERCULOSIS ASSOCIATION CLINIC

As in previous years a high source of notifications came from this source though not as high as previously. From a total of 14,758 X-rays 16 cases of active and 10 cases of inactive disease were found, at respective rates per 1,000 of 1·1 and 0·68. In addition there were 157 other significant conditions reported at a rate of 10·6.

D. SYDNEY HOSPITAL UNIT—ANTI-TUBERCULOSIS ASSOCIATION

The number of active and inactive cases found here were the same as in 1970. Out of a total of 27,615 people X-rayed there was a yield of 7 active and 4 inactive cases of tuberculosis at rates per 1,000 of 0·25 and 0·14 respectively. Additionally 47 persons were reported with other significant conditions at a rate of 1·7.

Routine Hospital X-ray Programme

A total of 49,834 X-rays were taken at fixed miniature units installed in metropolitan hospitals compared with 58,406 in 1970. However, 12,060 films were taken as part of chest clinic reviews. From the remaining 37,374 routine X-rays there were 38 cases of active disease, 132 cases of inactive disease and 183 other significant conditions were found.

Corresponding figures and rates for 1971 and 1970 were as follows:

	1971		1970	
	Cases	*Rate per 1,000*	*Cases*	*Rate per 1,000*
Active	38	1·01	40	0·93
Inactive	132	3·49	218	5·07
Other significant conditions	183	..	448	..

As far as the miniature X-ray units installed in country hospitals were concerned, a total of 4,960 X-rays were taken at the Wollongong Hospital. Of these, 3,046 were routine clinic follow-ups.

From the remaining 1,914 X-rayed, 1 active and 39 inactive cases of tuberculosis were found at the rate of 0·52 and 20·3 respectively. In addition 10 other significant conditions were reported. Corresponding figures for 1970 were 2 active and 1 inactive case of tuberculosis as well as 37 other significant conditions.

Psychiatric Hospital X-rays

These were derived from two sources—

- Miniature units installed in psychiatric hospitals.
- Mobile surveys in psychiatric hospitals where units were not installed.

A. MINIATURE UNITS

From these installed units 4,100 patients were X-rayed which resulted in a total of 2 active and 2 inactive cases of tuberculosis and 2 other significant conditions. The rates per 1,000 for these findings were 0·49 respectively in each case. These figures should be compared with 13 active and 72 inactive cases of tuberculosis and 74 other conditions for the year 1969.

B. MOBILE SURVEYS

The mobile X-ray took 10,410 X-rays which resulted in 11 cases of active tuberculosis, 74 inactive and 74 other conditions. The rates corresponding to this were 1·06, 7·10 and 7·10 respectively. These figures should be compared with 3 active and 2 inactive cases, 21 other significant conditions for the year 1970.

Implementation of Compulsory Surveys

This was carried out on a very reduced scale as compared with previous years.

Following a successful pilot survey in part of the electorate of Yaralla in 1970 the facilities of the Treasury Computer Centre were used. Owing to late delivery of punching equipment and difficulty in writing computer programmes the number of electorates followed up was limited.

Implementation was carried out in the electorates of Georges River, Hurstville, Lake Macquarie, Cessnock and Liverpool. Not all the follow-up was completed in all these areas and no prosecutions were initiated during 1971.

It is expected that it will be necessary to lay information for prosecution for one defaulter in the Lake Macquarie electorate early in 1972.

EPIDEMIOLOGICAL SURVEYS

The 1971 figures for the infection rate in school children which comprised the majority of these figures and other age groups are shown in table VIII and the percentage negative compared with the relevant percentage negative for 1970.

As contrasted with 1970, emphasis was laid on 3rd and 5th forms as compared with the emphasis on 1st and 3rd forms in 1970. These statistics are shown by epidemiological school surveys pupils age 15 and 17; surveys from schools where a case of tuberculosis was found amongst the staff or pupils, National Servicemen and people attending tuberculosis divisional headquarters. Where significant numbers were covered a slight increase in the number negative was noted as compared with 1970, when it is considered that this includes a higher age group it can be seen that the increase in the percentage of negative reactors is more marked.

The totals for the age groups 0–4 and 25 and above are not sufficient in numbers to give an adequate picture of those sections of the community.

As seen in previous years the 0–9 age groups are mainly composed of children who had been exposed to a proven case of tuberculosis in the kindergarten and primary school areas.

There was a further decrease in the infection rate in the 20–24 age group from 6·0 in 1970 to 4·9 in 1971. The 20–24 age group consisted mainly of National Servicemen, average age, 20.

TABLE VIII—EPIDEMIOLOGICAL TUBERCULIN TESTS

Type of Survey—School, Special, Divisional Headquarters and National Servicemen

Age	Number tested	Positive				Negative		
		Not previously vaccinated with B.C.G.		Previously vaccinated with B.C.G.		1971		1970
		No.	Per cent*	No.	Per cent**	No.	Per cent*	Per cent*
0–4 ..	81	..	..	2	2·5	79	100·0	97·1
5–9 ..	531	7	1·3	10	1·9	514	98·7	98·8
10–14 ..	33,986	495	1·4	560	1·6	33,031	98·6	98·3
15–19 ..	12,759	269	2·1	379	3·0	12,111	97·9	97·5
20–24 ..	2,340	102	4·9	257	11·0	1,981	95·1	94·0
25–29 ..	123	26	22·4	7	5·6	90	77·6	69·0
30–34 ..	95	29	33·3	8	8·4	58	61·1	63·0
35–39 ..	30	12	42·9	2	6·7	16	57·1	64·1
40–44 ..	29	15	53·6	1	3·4	13	46·4	58·7
45–49 ..	24	8	33·3	..	..	16	66·7	68·75
50 & over	26	18	69·2	..	..	8	30·8	46·7
Totals ..	50,024	981	2·0	1,226	2·4	47,917	93·7	97·74

* This is a percentage of the number of persons tested less the number of those persons who were previously vaccinated with B.C.G.
** This percentage relates to the number tested.

As a result of the assessment of the above figures it is not intended to proceed with routine epidemiological testing of all schools in the metropolitan area during 1972. However, it is considered from an epidemiological study aspect that a small number of schools will be tested from amongst the high and low areas of tuberculin infection. In addition a more thorough coverage of the country areas will be carried out which areas have not been tested as a whole for some years. It is also planned to proceed with a special survey in the northwestern area where the presence of atypical infection is suspected. This will be related to the work which is being carried out by Dr Abrahams in Queensland where the same problem exists only to a far greater extent. As has been the custom in previous years, consideration of chemoprophylaxis of the recent convertor and large reactor continues.

As mentioned in the 1970 annual report a survey was conducted amongst people who were notified as suffering from infectious hepatitis in 1969–70. A total of 2,348 cases were followed-up out of a total of 3,592. Also, owing to lack of communication in what was required in the answers most of the figures were omitted as far as the South Coast was concerned.

From this eleven people were reported as having had injections, either mantoux and/or B.C.G. within the 3 months preceding the development of hepatitis. From examination of the case histories it should be noted that only a small proportion of the people concerned were from school surveys and that the distribution was approximately equal whether the separate syringe—separate needle was used or the multidose syringe flaming technique.

The fact that it was not possible to contact the patients other than by letter only, left much to be desired, therefore the figures obtained must not be regarded as completely accurate.

With respect to infection at the site of injection, four people admitted to this—they were all hospital staff, two of them had multiple injections and did not state which of their injections were followed by infection.

It is desirable to point out that the majority of people who developed hepatitis showed no relationship between development of this latter disease in any preceding test or B.C.G. vaccination. The following figures summarize the findings of this survey. (Table VIIIA.)

TUBERCULOSIS NURSES SECTION

During the year, the work of the tuberculosis nurses showed little change in volume compared with the previous year. There was a decrease (from 317 to 245) in the number of patients receiving streptomycin injections, presumably due to the continuing decrease in notifications of new cases. The total number of visits made by the departmental sisters similarly decreased (from 13,893 to 12, 956).

TABLE VIIIA

N.S.W.	Number notified 1969-1970	Replied to questionnaire	Injections *less* than 3 months preceding (hepatitis)				Injections more than 3 months preceding hepatitis				Not known	Infection present	Wrong diagnosis	No injection
			Mantoux	BCG	Others	Total patients	Mantoux	BCG	Others	Total patients				
Metropolitan	1,199	765	9	5	83	100	22	3	20	29	435	2	23	615
Newcastle	563	411	1	1	8	9	11	3	2	14	38	1	..	345
Riverina	353	275	..	..	32	32	..	..	7	7	80	..	3	239
Northwest	244	128	1	1	12	13	24	13	1	25	12	..	..	91
North Coast	190	45	..	..	15	15	1	..	2	3	1	..	..	27
*South Coast	614	315	..	..	..	..	..	..	..	..	300	..	2	268
West	429	409	..	..	22	27	41	17	3	43	12	..	..	322
Total	3,592	2,348	11	7	172	196	99	36	35	121	878	3	28	1,907

* Due to lack of communication in what was required in the answers, South Coast figures are quite unreliable.

In addition to their routine work with clinics, etc., the tuberculosis nurses assisted in a survey by visiting women who were newly notified this year as suffering from tuberculosis and enquiring as to their previous experience as nurses or domestic staff in hospitals.

Several country sisters engaged in community health services and/or Aboriginal Welfare (not actually in this Division, but engaged in some form of tuberculosis control) were given short courses in the city to acquaint them with problems which may be encountered in this aspect of their work.

HOSPITAL BEDS—TABLE IX

During 1971 further beds were closed at the hospitals listed below. Beds handed over for other purposes were:

Royal Prince Alfred Hospital	12
St Vincent's Hospital	17
Royal North Shore Hospital	50
North Ryde Psychiatric Centre	15
Picton Lakes Village	9

A further decrease is noted in the average number of occupied beds during 1970–71 to 215·7 from 307·5 in 1970.

An increase was noted in the following hospital or hospitals only.

Hospital	*Av.* 1970	*Av.* 1971	*Reason*
Parramatta Hospital	7·5	9·2	M.M.H. Survey
Albury Base Hospital	1·7	1·9	..

TABLE IX—BEDS AVAILABLE

Year ended 31st December, 1971

Institution	Number of TB beds available at 31st December (after the deduction of beds released conditionally)	Number released for use of non TB patients	Average number of daily occupied beds during year by TB patients	Remarks
Randwick Chest Hospital	143	..	87·2	
Royal Prince Alfred Hospital	25	75	9·4	12 beds closed
St Vincent's Hospital	25	75	7·1	17 beds closed
Royal North Shore Hospital	25	75	9·1	50 beds closed
Parramatta Hospital	12	4	9·2	
Rankin Park	54	60	23·6	
North Ryde Psychiatric Centre				
Tuberculosis Wards	62	70	44·5	15 beds closed
Investigation Ward	..	12	..	
Woollongong Hospital	20	..	5·1	
Dubbo Base Hospital	10	..	3·1	
Grafton Base Hospital	10	..	1·5	
Tamworth Base Hospital	21	..	6·7	
Lismore Base Hospital	10	..	0·6	
Wagga Wagga Base Hospital	10	..	2·8	
Albury Base Hospital	8	15	1·9	
Broken Hill and District Hospital	18	..	1·6	
Lidcombe Hospital (Lock up Ward)	10	62	2·3	
Picton Lakes Village	..	9	..	9 beds closed
Goulburn Base Hospital	..	10	..	
St George District Hospital	..	15	..	
Manly District Hospital	..	15	..	
Canterbury Hospital	..	25	..	
Totals	463	522	215·7	

Table X—Bacteriologically Positive Cases Occurring During Year

Excluding Atypical Disease—Year ended 31st December, 1971

Number of persons who became positive during year* excluding atypical disease

Age group	Total number of persons who became positive during year	Number of persons hospitalized during year	Number of persons *not* hospitalized during year
0–4	7	7	0
5–9	1	1	0
10–14	1	1	0
15–19	4	4	0
20–24	19	17	2
25–29	17	15	2
30–34	28	25	3
35–39	27	25	2
40–44	23	21	2
45–49	47	42	5
50–54	41	39	2
55–59	42	39	3
60–64	43	39	4
65–69	45	42	3
70–74	26	24	2
75 and over	46	43	3
N/S	..	..	..
Total	417	384	33

* Includes notifications, reactivated cases and relapsed cases.

Table XI—Bacteriologically Positive Atypical Cases Occurring During Year

Year ended 31st December, 1971

Number of persons suffering from atypical disease who became positive during the year*

Age group	Total number of persons who became positive during year	Number of persons hospitalized during year	Number of persons *not* hospitalized during year
0–4	1	1	..
5–9	1	1	..
10–14	..	..	..
15–19	1	1	..
20–24	..	..	..
25–29	..	..	..
30–34	..	..	..
35–39	1	1	..
40–44	1	1	..
45–49	1	1	..
50–54	2	2	..
55–59	1	..	1
60–64	4	4	..
65–69	1	..	1
70–74	1	..	1
75 and over	3	3	..
N/S	..	..	..
Total	18	15	3

* Includes notifications, reactivated cases, relapsed cases.

Table XIII—Cases Bacteriologically Positive* for 12 Months or Longer

Excluding Atypical Disease—Year ended 31st December, 1971

Number of persons positive* before the beginning of year and still positive* at end of year, excluding atypical disease shown on table XIV

Age group	Number in hospital at end of year	Number *not* in hospital at end of year	Total number positive at end of year
45–49	..	2	2
50–54	2	2	4
55–59	..	1	1
60–64	..	..	..
65–69	1	1	2
70–74	1	..	1
75 and over	1	..	1
N/S	..	..	..
Total	5	6	11

* A positive case is regarded as one that has not firmly converted to negative on culture.

Table XIV—Atypical Cases Bacteriologically Positive* for 12 Months or Longer

Year ended 31st December, 1971

Number of *atypical* cases positive* before the beginning of year, still positive* at end of year

Age Group	Number in hospital at end of year	Number *not* in hospital at end of year	Total number positive at end of year
40–44	..	1	1
45–49	..	..	..
50–54	..	1	1
55–59	..	..	..
60–64	1	2	3
65–69	..	2	2
70–74	..	..	..
75 and over	..	2	2
N/S	..	..	..
Total	1	8	9

* A positive case is regarded as one that has not firmly converted to negative on culture.

Table XV—Drug Resistance

Year ended 31st December, 1971

Number of patients resistant to—

Strepto-mycin	PAS	INH	Strepto-mycin and PAS only*	Strepto-mycin and INH only*	PAS and INH only*	All 3 primary drugs*	Ethion-amide	Pyrazin-amide	Cyclo-serine	Vio-mycin	Etham-butol	Other drugs—please list		
												Capreo-mycin	Rifam-picin	Isoxyl
Untreated Cases (No Previous Chemotherapy)														
1	2	13	..	1	2	..	..	..	..	..	..	..	..	1
Previously Treated Cases														
4	6	19	..	4	4	..	2	..	2	..	2	1	3	1

* Patients listed as resistant to more than one primary drug should be listed under the appropriate individual drugs as well.

Note: (1) Atypical mycobacterial strains are not included in this return.
(2) Previously treated cases include those becoming resistant during treatment.

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TABLE XVI—BACTERIOLOGY SENSITIVITY TESTING

Year ended 31*st December*, 1971

Patients (with typical organisms) on whose cultures sensitivity tests were performed	
New cases (not including reactivated cases)	280
Reactivated cases	30
Chronic cases	6
Carry over cases	63
Total number of cases	379

NOTE—

(1) A patient who had several sensitivity tests in the year should be included only once.

(2) A chronic case is one that was positive before the beginning of year and still positive at end of year.

(3) A carry over case is one that was positive before the beginning of year but became negative during year. Included in this category are previously chronic cases who became negative during uear.

(4) Patients with atypical organisms are not included in this return.

Bacteriologically Positive Cases—Tables X, XI, XII, XIII, XIV, XV, XVI

There was a small decrease in the total number of persons who became positive in 1971, 417 as compared with 511 in 1970. During 1971 a further reduction was seen in the number of bacteriologically positive atypical cases, 18 as compared with 24 in 1970. It is at least 11 years since an identification of *M. Bovis* has been made in New South Wales from a human source. During 1971, 2 persons were identified as having been infected with bovine tubercle bacilli, one of these was from a man who was known to have suffered from tuberculosis of the spine as a child in England. The organism was identified with the disease when it became reactivated in 1971. The other was a 56-year-old man suffering with tuberculosis of the lungs. This man lived for some years in England before migrating to Australia. Also he was known to have worked at cattle stations in northern New South Wales.

TABLE XII

Number of patients with disease caused by bovine organisms from whom positive cultures were obtained during the year.

Pulmonary	1
Non-pulmonary	1

There is a further reduction in the number of chronic positive cases from thirteen in 1970 to eleven in 1971. Of the above number of thirteen persons nine have still remained positive despite treatment, two have died and two have apparently converted as a result of newer drugs. No new chronic positive cases have emerged as a result of new notification during 1970, but during 1971, two females were discovered to be chronic positives of some years standing who are under the supervision of private practitioners.

As far as the atypical chronic positive cases are concerned an increase has occurred from eight in 1970 to nine in 1971. An examination of drug resistance shows a decrease in both untreated and previously treated cases. As before, both are only a small percentage of the total tested. When the number of patients for whom sensitivity tests was carried out is considered, a decline from 1970 is noted which is parallel to the number of persons notified with active disease. A total of thirteen strains of organisms from patients known to have had any treatment with anti-tuberculosis drugs was found. All these were resistant to isoniazid but only one to streptomycin.

Analysis of these patients showed that eight were born outside Australia and seven of those had arrived in Australia in the past 4 years. As it is probable that most of these people were X-rayed on arrival and were clear it would appear that the original exposure was in the country of origin to cases already resistant to anti-tuberculosis chemotherapeutic agents.

TUBERCULOSIS IN THE HEALTH DISTRICTS

Visits were made by the Director of Tuberculosis for New South Wales during 1971 to all the Health Districts with the exception of the North Coast. Comments referable to each district are to be found in the following paragraphs.

Metropolitan Health District

A further decrease has occurred in the incidence of tuberculosis. The highest incidence area per 1,000 of population in the metropolitan area was in the city of Sydney at 0·76; as compared with 0·85 per 1,000 in 1970.

All remaining areas were below 0·26 per 1,000 in incidence as compared with 0·36 in 1970. The lowest incidence areas were Hornsby 0·06, Hurstville 0·06, Ku-ring-gai 0·02, North Sydney 0·09, Strathfield 0·07, Sutherland 0·09 and Warringah 0·04.

Miniature mass radiography surveys were carried out by both the Tuberculosis Division and the Anti-Tuberculosis Association. A total of 177,147 persons were X-rayed, giving a yield of 19 active and 59 inactive cases of tuberculosis and 186 other significant conditions. Excluding cases still under investigation the rate per 1,000 proven was 0·11.

The epidemiological tuberculin tests in 1971 showed a further drop—comparison with the 1970 figures showed as follows:

Age Group	1970	1971
10–14 (average age 14)	..	1·4
10–14 (average age 12)	1·65	..
15–19 (average age 16)	..	2·1
15–19 (average age 15)	2·1	..

The attendances at metropolitan chest clinics (less western area) decreased from 138,071 in 1970 to 111,040 in 1971. However, this was mainly due to gradual transfer of patients from the Anti-Tuberculosis Association, and to a lesser extent to the change in contact procedures.

Tuberculosis beds were released for other purposes at North Ryde Psychiatric Centre, fifteen; Royal North Shore Hospital, fifty; Royal Prince Alfred Hospital, twelve, and St Vincent's Hospital, seventeen.

Western Metropolitan Health District

The incidence of tuberculosis in this Health District cannot be compared with previous records as the report was not kept separately in the past. The highest incidence area was Auburn—0·27 per 1,000; and the lowest areas were Baulkham Hills, 0·05, Campbelltown, 0·03, Holroyd, 0·06, and Liverpool, 0·07. The latter two areas deserve comment as M.M.R. surveys were carried out during 1971.

The Anti-Tuberculosis Association carried out compulsory mass chest X-ray surveys in the electorates of Fairfield, Merrylands and Liverpool. A total of 88,389 people were X-rayed resulting in 12 active and 8 inactive cases of tuberculosis together with 128 other significant conditions.

Chest clinic attendances dropped from 17,680 to 15,592—this could be related to the introduction of new contact procedures. However, increased home visiting occurred from 2,285 to 2,728, relating to migrant follow-up and closer supervision of cases on domiciliary chemotherapy.

Newcastle Health District

The incidence of tuberculosis in this Health District was the same in 1971 as for 1970, that is 0·13 per 1,000 of total population. The highest incidence area was Cessnock, 0·81 per 1,000—and this figure was without doubt related to the compulsory chest X-ray survey carried out in that area. All other areas showed an incidence of 0·24 per 1,000 or lower, the lowest incidence being in Maitland, 0·03 and Port Stephens, 0·06.

Altogether 73 cases of tuberculosis were notified composed of 54 males and 19 female cases; these came from areas with a total population of 480,185, the remaining areas, population 71,874, showed no evidence of this disease.

The Anti-Tuberculosis Association carried out surveys in the electorates of Lake Macquarie, Cessnock, Raleigh, Oxley and Maitland. A total of 105,732 people were X-rayed giving rise to 10 active and 16 inactive cases of tuberculosis, as well as 222 other significant conditions.

Attendances at chest clinics generally decreased from 14,684 in 1970 to 13,250 in 1971. This was mainly related to alteration in contact procedures. Home visiting also decreased slightly from 3,047 in 1970 to 2,794 in 1971.

It is expected that the new 100 mm unit at the Royal Newcastle Hospital will commence to function in 1972.

No epidemiological surveys were carried out.

North Coast Health District

The total incidence for this Health District per 1,000 was 0·07 in 1971 as compared with 0·20 in 1970, when mass surveys played a big part in temporarily increasing this statistic. The highest incidence area was Woodburn, 0·24, and the lowest, Coffs Harbour, 0·05.

The notifications comprised 8 males and 3 females giving a total of 11 cases. From the total population of 160,971, areas with population totalling 66,523 showed no evidence of tuberculosis.

No other mass X-ray surveys nor epidemiological surveys were carried out in the North Coast during 1971.

A slight decrease occurred in chest clinic attendances from 5,865 to 5,353, and in home visits from 299 to 248 for the years 1970 and 1971 respectively. As in other cases this related to alteration in contact procedures.

Northwestern Health District

From the total Health District population of 166,177, a majority of areas totalling 111,799 people showed no evidence of tuberculosis. The overall incidence per 1,000 was 0·07. The highest areas were Quirindi, 0·70 (2 cases) and Uralla, 0·50 (2 cases). The lowest incidence area with tuberculosis was Walcha, 0·30 (1 case).

The total notifications for 1971 were twelve—eight males and four females.

Neither mass X-ray surveys nor epidemiological surveys were carried out during the year. However, it is intended that special epidemiological surveys will be carried out in 1972 in co-operation with Dr Abrahams of Queensland relating to his work associated with atypical infection.

Chest clinic attendances showed a slight increase from 2,785 in 1970 to 2,962 in 1971. A slight decrease in home visits occurred from 476 to 392.

Western Health District

From the total population of 271,279, areas totalling 119,728 showed no evidence of tuberculosis. From the remainder of the Health District, 29 cases were notified comprised of 20 males and 9 females. The total incidence for the Western Health District was 0·11, the highest incidence areas being Cowra, 0·55 (4 cases), Abercrombie, 0·40 (1 case), Cudgegong, 0·38 (2 cases), and Boree, 0·36 (2 cases). The lowest incidence was Orange, 0·04 (1 case).

The Tuberculosis Division carried out mass chest X-ray surveys in Boree, Cowra, Jemalong and Orange—a total of 29,088 X-rays were taken resulting in 8 active, 14 inactive cases of tuberculosis and 50 other significant conditions. No epidemiological surveys were conducted.

Chest clinic attendances rose from 4,761 in 1970 to 5,544 in 1971, as did home visits—from 650 to 778 for corresponding periods. The increase in clinic attendances was partly related to the increased load of work at the Katoomba Chest Clinic which had been opened the year before.

South Coast Health District

From all sources a total of 44 new cases of active tuberculosis was notified during 1971—a total of 29 males and 15 females. This represented an incidence of 0·12 per 1,000 as compared with 0·7 per 1,000 in the preceding years.

The highest incidence area was Bowral, 0·34 (two cases) and Eurobodalla, 0·36 (three cases). The lowest incidence areas were Shellharbour and Shoalhaven with incidence of 0·03 per 1,000 (each one case).

No mass miniature X-ray surveys were carried out, but epidemiological programmes were proceeded with. The conversion rate for 3rd year average age 15 was 1·5 per cent, and for 5th year average age 17 was 2·9 per cent.

The 15-year age group showed a drop from 2·96 per cent in 1970 to 1·5 per cent in 1951.

The chest clinic attendances dropped from 18,867 to 14,800, which was related to change in contact procedures. Home visiting increased from 2,024 to 2,803 which was the result of increase in supervised chemotherapy routines.

A new clinic was commenced at Bowral in October, 1971.

Riverina Health District

The average incidence for the whole of the Riverina Health District was 0·06. This is probably due to the fact that out of the total population of 254,222 there were local government areas with population totalling 137,377 where no cases were notified. A total of 15 cases were notified, 14 males and 1 female. The highest incidence area was Holbrook, 0·40 (1 case), and the lowest where cases were notified, Wade, 0·05 (1 case).

No mass surveys nor epidemiological surveys were reported.

Clinic attendances were slightly up for 1971, 4,588 for 1970 as compared with 4,875 for 1971. Home visits likewise increased from 254 to 393.

Broken Hill Health District

Two cases of tuberculosis were notified from this area in 1971, one male and one female, giving an incidence of 0·07. This was a marked lessening when compared with rate of 0·38 in 1970.

No miniature X-ray surveys were carried out during the year. Epidmiological surveys showed a conversion rate of 2·25 per cent for all years at high school compared with 3·38 per cent for the preceding year.

Attendances at the chest clinics increased from 797 in 1970 to 1,582 in 1971. Home visits increased from 86 to 124 in the corresponding times. Plans are being made to transfer the present tuberculosis out-patients block which is at present separate from the in-patient block to the one building. It is intended that both will be housed in the ground floor of the old nurses home.

TUBERCULOSIS IN THE MINING INDUSTRY

Although there were no notifications of active tuberculosis from employees in both the coalmining and Broken Hill areas during 1970, one case was reported from the coalmining industry in 1971 and one for the Broken Hill mining area for the same period.

TABLE XVII

Year	Joint Coal Board	Bureau of Medical Inspection (Broken Hill)
1956	5	.. } Not available
1957	9	.. }
1958	8	.. }
1959	8	9
1960	2	4
1961	3	3
1962	3	5
1963	4	2
1964	7	2
1965	5	1
1966	2	1
1967	3	..
1968	..	2
1969	3	..
1970	..	..
1971	1	1

TWENTY-SECOND NATIONAL TUBERCULOSIS ADVISORY COUNCIL

Resulting from a study of the aspects of the campaign discussed at the above meeting the following recommendations for action were received and given ministerial approval in this State:

Australian tuberculin test standards trial

Council recommends that for routine diagnostic purposes, the standard Australian tuberculin test should be the Mantoux performed with ten international units (IU) of PPD (Commonwealth Serum Laboratories) and read at 48–72 hours.

Degrees of reaction should be classified as follows:

Negative—less than 5 mm diameter.

Weak positive reactions—5 to 9 mm diameter.

Intermediate positive reactions—10 to 14 mm diameter.

Strong positive reactions—15 mm diameter or more or with vesiculation.

Full details of the test are given in *The Tuberculin Test* published by the Commonwealth Department of Health.

Council suggests that the above recommendations should be given wide publicity particularly in general hospitals and clinics in view of the advantages of having a standardized test.

The above recommendations are for routine work and in no sense preclude special testing with other doses or other antigens.

Brochure for patients

Council revolved that its appreciation and thanks for work performed be recorded and conveyed to Sister P. Boland and Mrs R. Hendry, non-Council members of the sub-committee which compiled the brochure *Tuberculosis—From A to Z for Patients.*

Tuberculosis in blood donors

Council considers that persons who have been treated for tuberculosis may be accepted as blood donors one year after the completion of an adequate course of treatment with anti-tuberculous drugs and upon certification by a Director of Tuberculosis (or his agent) that they are suitable for blood donation.

Continuance of mass X-ray surveys

Council reviewed its recommendations of 1970 with regard to the frequency of compulsory mass X-ray surveys and gave as its opinion and recommendations:

(a) The great success of the Australian tuberculosis campaign has been based on the compulsory mass X-ray.

(b) Policy with regard to mass surveys should be kept under regular review by Council.

(c) The interval between surveys should be related to the discovery of active tuberculosis from this source.

(d) Interval between surveys of 4 to 5 years is considered appropriate for the present incidence of disease discovered.

(e) Areas where the yield of cases from mass X-ray surveys is above 0·5 per 1,000 of active tuberculosis or where there is other evidence of a high incidence warrant more frequent attention.

(f) Present surveys should have as their second priority the accumulation of data of those with pulmonary abnormalities who require further observation.

Eastern Regional Conference—1972

Council records with pleasure that Eastern Regional Conference is to be held in Sydney in 1972, and that it will fully support the conduct of it.

Matters arising out of general business

Council suggests that the veterinary students at Sydney University be offered BCG vaccination and this should be advised.

Comments

All the above matters were conveyed to the relevant persons. However, the brochure for patients has not yet been printed but this is expected in the near future.

The Director of Tuberculosis has been appointed as secretary for the Eastern Regional Conference in 1972.

In relation to the veterinary students at Sydney University, this matter was fully discussed with the appropriate authorities and BCG is now being given to them.

FIFTH AUSTRALIAN TUBERCULOSIS CLINICAL CONFERENCE

This conference was held in Perth, Western Australia, from 19th to 23rd April, 1971. The following speakers from New South Wales delivered papers:

Dr K. W. H. Harris—"Economics of the tuberculosis campaign and its significance to the Australian community".

Dr M. Basil-Jones—"Sarcoidosis its cause and course".

Dr B. J. S. HARTNETT—"Respiratory function of pulmonary tuberculosis".

Dr G. J. N. NAIRN—"Pulmonary tuberculosis in children. A clinical report of cases from the Wollongong Chest Clinic".

Dr A. A. FRASER—"A review of immigrants with tuberculosis treated at the Randwick Chest Hospital".

OVERSEAS VISIT

In July, 1971, the Director of Tuberculosis for New South Wales, Dr K. W. H. Harris, visited various centres and conferences overseas. The places visited were as follows:

Denmark:

Copenhagen—Statens Serum Institut; Copenhagen Chest Clinic; Danish Tuberculosis Index; Bisperberj Hospital.

Roskilde—Chest Clinic.

United Kingdom:

Edinburgh—Combined meeting of B.T.T.U. Scottish TB Association.
London—Brompton Hospital.

Russia:

Moscow—XXIst Conference of the International Union Against Tuberculosis.

Hong Kong: Government Chest Clinic; Ruttonjee Sanatorium.

Singapore: Singapore Anti-Tuberculosis Association.

At each place current tuberculosis problems were discussed with the local authorities and covered the following field:

Bacteriology.

Study of Patients Infected with Mycobacterium Tuberculosis and Mycobacterium Avium.

Mycobacterial Infection in Hong Kong.

Epidemiology.

BCG Vaccination.

Chemoprophylaxis.

Chemotherapy.

Survey of Departments of Chest Disease in England and Wales.

Tuberculosis Control in Russia (a report by the U.S.S.R. Ministry of Health).

The Singapore Anti-Tuberculosis Association.

Whilst at the International Union Conference in Moscow the following Australians either gave papers or chaired sessions:

Dr G. Howells.

Mrs R. Hendry.

Dr K. W. H. Harris.

RIFAMPICIN TRIAL

The rifampicin trial reported in 1970 continued during 1971. All statistics for this have been completed and the report is being published in the *Medical Journal of Australia* as well as overseas journals in a series of several articles.

CAPITAL AND MAINTENANCE EXPENDITURE

Visits continued to be paid to the hospitals with both in- and out-patient units as well as others who make claims for tuberculosis expenditure in terms of the capital and maintenance expenditure document from the Commonwealth Health Department of 1969. Other discussions have continued to be carried out with respect to the reassessment of costing of the tuberculosis programme between both the Commonwealth Health Department, the Hospitals Commission and the Tuberculosis Division.

CONCLUSION

In conclusion further emphasis should be placed on the decrease in both tuberculosis morbidity and mortality occurring during 1971 which as stated previously is the lowest ever in this State. A further decrease was apparent in the chronic positive register both from mycobacterium tuberculosis var hominus and the atypical bacilli.

Although the above decreases are to be expected it behoves us to be certain that we do not become complacent. Emphasis still needs to be increasingly laid upon the preventive aspects, particularly in relation to the follow-up of inactive cases, B.C.G. vaccination of the selected groups who are tuberculin negative and chemoprophylaxis of those infected and above all to see that appropriate supervision is carried out in the cases of those on treatment.

As stated in my previous report, for the continuation of the tuberculosis campaign those who are associated with it must ensure that what is being done would not only be reasonable and practicable but also essential.

This opportunity is taken to express thanks to the senior officers of the New South Wales Department of Health and the Commonwealth Health Department, the Hospitals Commission, the staff of the Division of Tuberculosis, the Anti-Tuberculosis Association of New South Wales and all other intra and interdepartmental personnel and organizations without whose continual assistance and whole-hearted co-operation this campaign would not continue to succeed.

IMMUNIZATION CENTRE

Medical Officer-in-Charge: J .R. B. Beaumont, B.Sc., M.B., B.S., D.A., F.F.A.R.A.C.S.

Location: 7th Floor, Winchcombe House, 9/13 Young Street, Sydney

Function: Vaccine Distribution

POLIOMYELITIS VACCINE

This section undertakes the regular distribution of poliomyelitis vaccine throughout the State of New South Wales, to local authorities and medical practitioners in the metropolitan area and to medical officers of health in health districts and baby health centres.

Returns of vaccine were not required to be furnished by local authorities, medical officers of health or medical practitioners as from 1st January, 1971.

RUBELLA VACCINE

Rubella vaccine for the use of medical officers of health, departmental officers immunizing schoolchildren and private and public hospitals is stored at and distributed from the immunization centre. Seventy-eight thousand three hundred and ninety-five doses of Rubella vaccine were issued from the centre.

ANTHRAX VACCINE

Anthrax vaccine for the use of departmental officers in the protection of Agriculture Department staff is ordered by and distributed from the centre.

INFLUENZA VACCINE

Immunization of police officers and inspectors from the Department of Agriculture was carried out at the immunization centre. The response on the part of the police was very poor, only 214 persons presenting themselves for vaccination.

IMMUNIZATION CENTRE

An immunization clinic is conducted on the 7th Floor, 9/13 Young Street, Sydney, for vaccination against poliomyelitis, pertussis, diphtheria and tetanus and other diseases as required.

Staff

One clerical assistant.

Sick Bay

Some 120 members of the Department presented themselves for emergency treatment of illness or accident.

POLIOMYELITIS

Incidence of Poliomyelitis

One case of poliomyelitis was notified at the end of the year. The case was not confirmed until the following year hence it will be in the 1972 figures. This makes a period of 6 years during which no confirmed case of poliomyelitis has occured in New South Wales.

Poliomyelitis Vaccination Campaign

Quantities of Sabin vaccine distributed from the immunization centre during the past 4 years were:

	1968	1969	1970	1971
	Sabin	Sabin	Sabin	Sabin
	Doses	Doses	Doses	Doses
To medical officers of health and metropolitan Councils ..	1,130,880	592,480	496,420	627,438
Immunization centre	8,300	3,320	1,920	1,932
Total	1,139,180	595,800	498,340	629,370

Total Sabin issues (1st May, 1967, to 31st December, 1971). 7,654,470 doses.

PUBLIC HEALTH SERVICES

HEALTH INSPECTION BRANCH

Chief Health Inspector: K. W. BAGNALL

Location: 9–13 Young Street, Sydney

STAFF AS AT 31st DECEMBER, 1971

Establishment at head office comprised:

1 Deputy Chief Health Inspector
4 Senior Health Inspectors
12 Health Inspectors (4 positions vacant)
3 trainee Health Inspectors (1 vacancy)
2 Registered Surveyors (1 vacancy)
1 Senior and 1 Junior Tracer (female)
2 female office Assistants
2 Typists
1 Attendant to assist Surveyors
1 Records Clerk

Seven senior health inspectors and twenty health inspectors (three positions vacant) were detached for duty in the various health districts.

STAFF CHANGES

There were six appointments (five health inspectors and one clerical assistant). Eight transfers involving health inspectors occurred—five within the Branch, two to another Branch of this Department and one from another Branch of the Department. Eight resignations included six health inspectors, one shorthand-writer/typist and one clerical assistant. A health inspector returned from a period of secondment to the Territory of Papua and New Guinea.

GENERAL

During the year regular inspections were made by Branch officers at approved nightsoil and garbage depots. Generally disposal procedures at nightsoil depots were satisfactory, however, in several instances the methods used to dispose garbage were not being applied to ensure that nuisance was avoided. It is also evident that modern packaging and extensive use of disposable plastic and paper products for consumer goods is placing high demand on existing garbage depots and areas for "trade waste" disposal. Some relief may occur in the Eastern Suburbs of Sydney with the completion of the incinerator at Rosebery.

The future needs for garbage disposal in the metropolitan area of Sydney will require extensive enquiry and planning. In this regard Branch officers have been working in close liaison with the Department of Environment and the Metropolitan Waste Disposal Authority on the problems that may occur in this field of environmental sanitation.

The overall problem of sewage disposal through ocean outfalls was accentuated when an industrial dispute resulted in untreated sewage discharges from the three main outfalls at North Head, Bondi and Malabar. Adverse winds and sea currents caused contamination of beaches and local authorities closed beaches for general bathing or surfing. Series of sea-water samples were obtained by Branch health inspectors from affected areas and inspection of beach areas was carried out until normal conditions were evident.

As a result of observations and sampling by Branch health inspectors, in the latter part of the year, seaside lagoons at Narrabeen, Dee Why and Curl Curl were found to be polluted. Following a direction from this Department the areas were closed to the public for swimming by Warringah Shire Council.

The bacterial quality of enclosed waters was unsatisfactory and it became necessary to display warning notices for public information.

Investigation into the problem concerning collection and disposal of septic tank effluent within Warringah Shire continued throughout the year. A successful legal action was taken by the Branch against the deliberate discharge of septic tank effluent into a water course. It is evident that residential development is in demand on this coastal peninsular, however, most of the vacant land available for building lacks depth of soil and the ground cannot be used for disposal of household liquid wastes. As a result, the increasing volume of effluent to be removed by council's tanker service will continue to create problems until such time as the area becomes more extensively sewered.

Branch officers carried out investigation into a number of issues such as:

The investigation, approval and installation of package sewage treatment plants which produce high quality effluents to meet standards permitting discharge into watercourses or the sea.

The collection of disinfectant samples to determine whether the product was of satisfactory standard to achieve effective disinfection of hairdressing equipment and appliances. Test results obtained by the Government Analyst found deficiencies in strengths of certain products which resulted in the matter being taken up with the manufacturers concerned.

The increase in demand for caravans, camping and boating by outdoor enthusiasts, has stimulated use of chemical or portable toilets. To observe the sanitary effectiveness of such appliances a unit was installed at a residence for a practical test. Samples of the contents were obtained and examined by the Government Analyst to determine the sterilizing effect of chemicals used. One such unit was approved as a chemical closet. Further closet units being tested incorporate a process of incineration. Whilst testing of this type of appliance is incomplete, several defects have become evident.

The treatment of industrial liquid waste using pondage schemes for clarification of drainage continues to receive attention. This form of trade waste treatment has been successfully employed to counter problems such as wastes from poultry killing, sewage treatment or seepage runoff from garbage depots. Observations made by Branch officers throughout the year indicate that serious pollution to waterways can be avoided by these means. In some cases reclaimed water may be used for agricultural purposes or watering recreational areas such as golf courses.

Public swimming pools were regularly inspected during the swimming season and field tests of water carried out at poolsides permitted a ready appraisal at a given time of the quality of pool-water. This routine, coupled with bacteriological examination has led to improvement in maintenance and care of water quality. Seaside and salt water swimming enclosures were kept under observation in the same period.

NOXIOUS TRADES

The functions of the Noxious Trades Act, 1902, remain unchanged and amendment to change the title of the Act is still pending.

A slight reduction in the number of noxious trade licenses issued occurred.

The information gained by a Branch officer, who visited Brisbane last year, concerning disposal of tannery wastes has enabled treatment plants to be established in Sydney tanneries and provide effective control for nuisance-free operations.

Following complaints concerning odour nuisance from the activities of one trader and the delays associated with the provision of adequate odour control equipment, successful legal action was taken against the offending company.

COMMITTEES AND CONFERENCES

The Chief Health Inspector, or his Deputy, was engaged in a number of committees which included the Examining Committee for Licences for Fumigators using dangerous substances; the Standing Technical Committee on Septic Tanks; the Hunter River Pollution Control Committee; the Lake Macquarie Pollution Control Committee; various committees for the Standards Association of Australia; Examining Board for the Royal Society for the Promotion of Health; Examining Board for Pool Managers Association of New South Wales; and numerous interdepartmental committees.

BRANCH TRAINING

Staff training was carried out on a reduced scale due to limited intake of staff. Regular training sessions were organized for cadet inspectors and discussion periods for staff resulted in a general coverage of information of value to inspectors. A further extensive programme was arranged and carried out for World Health Organization fellows Kamboj and P. E. Misra from India. The fellows had a two months training attachment with the Health Inspection Branch.

DIPLOMA IN PUBLIC HEALTH

A programme was arranged at the request of Sydney University for students in Diploma in Public Health. Twelve half-day periods of lectures and field demonstrations were carried out by staff of the Health Inspection Branch.

SURVEY

During the year the following work was carried out:

Inspections of individual allotments of land in notified areas	47
Surveys of individual allotments of land in notified areas	323
New areas of land notified under section 55	4
Areas of land over which the section 55 notice was revoked	3
Areas of land over which the section 55 notice was partially revoked ..	1

During the year approximately 121,800 applications for search—unhealthy building certificate were processed, an increase of 10,000 over the same period for the previous year.

Work Performed by Health Inspectors in Metropolitan Area

January to December, 1971

	1970	1971
Local government areas surveyed	3	..
Inspection of buildings, shops warehouses, Produce stores, etc.	636	1,344
Hospitals, institutions, and schools	95	81
Aborigine reserves	3	2
Hotels, motels, boarding houses, and lodging houses	60	156
Theatres and public halls	6	6
Ventilation tests and odour control	17	51
Barber shops and hairdressing salons	224	201
Dilapidated and insanitary buildings	60	61
Noxious trades	532	498
Dead wool processing and hide and skin stores	54	65
Bedding and upholstering premises and samples collected	121	113
Second-hand clothing shops	26	40
Carpet and underfelt manufacturers	20	26
Abattoirs—drainage treatment and disposal	18	20
Dairies, pig, and poultryfarms	42	14
Pet food shops	38	96
Public swimming pools	250	159
Showgrounds, cattle saleyards, cemeteries, crematories, camping grounds and caravan parks	95	104
Nuisances investigated	1,087	1,255
River, bay, and beach pollution	330	267
Nightsoil and Garbage		
Scavenging districts assessed	8	..
Sanitary depots, existing and proposed—site inspections	801	742
Water Supplies, public and private	22	17
Sewage treatment works, existing and proposed	68	109
Septic Tanks		
Number of sites	..	3,006
Number of sites recommended for approval	3,511	2,496
Number of sites refused	934	770
Bores inspected	26	125
Bores tested	15	18
New plans examined for approval	38	46
Manufacturer's premises inspected	75	67
Existing septic tanks	2,784	855
Investigations of Infectious Diseases and Chemical Poisoning		
Number of cases investigated	1	9
Examination of Proposals Submitted		
Planning schemes	1	1
Plans of swimming pools and treatment plants	2	16
Package sewage treatment works	7	..
Sampling of water, effluents, trade waste; etc.	495	432
Sampling of other material	129	66
Sampling of swimming pool water	120	130
Special investigations	74	103
Consultations with engineers and architects and councils	383	409
Legislation		
Preparation of draft amendments to Acts and Regulations	2	..
Examination of draft legislation submitted by Department of Local Government	2	1
Health Education		
Brochures and pamphlets prepared	7	4
Intraining and D.P.H. Training		
Courses conducted	18	6
Courses Attended	..	9
Legal Proceedings		
Departmental	..	8
Appearances for councils	..	4
Unhealthy building land inspections	60	47
Unhealthy building land surveys	280	323
Land enquires	111,515	121,800
Areas revoked and partially revoked	1	4
Areas of land notified	14	4

FOOD INSPECTION BRANCH

Chief Inspector: W. J. MADGWICK

Deputy Chief Inspector: J. W. WING

Location: Lend Lease House, 47–53 Macquarie Street, Sydney

STAFF

7 Senior Food Inspectors
15 Food Inspectors
1 Office Assistant
1 Food Technologist } seconded
1 Typist }

Note (1): Of the seven senior food inspectors referred to above, one is detached for duty at each of the following health districts:

Western Metropolitan, North Coast, South Coast, Northwestern, Newcastle and Riverina. These food inspectors are detached for duty in the Western Metropolitan Health District and one food inspector in each of the Health Districts of the North Coast and Newcastle. One vacant position at the South Coast.

Note (2): This report does not include the work carried out in the abovementioned Health Districts.

ACTIVITIES

The work of the Branch is primarily concerned with the supervision of the sale of food and in a minor way with drugs, in regard to their composition, identity and labelling, the structure and condition of premises in which food and drugs are manufactured, stored and sold; the inspection of the equipment, appliances and vehicles used; the incidental duties associated with matters to secure the wholesomeness, cleanliness and freedom from contamination of food and drugs; and the implementation of the legal provisions required by the Pure Food Act, 1908, as amended.

FOOD SAMPLING

A total number of 3,157 samples of food of various kinds was purchased and submitted for analysis, and 3,376 samples of meat and 1,417 samples of spirits were field-tested by officers of the Branch; 418 samples of food were found to be below the prescribed standard and 217 successful prosecutions were instituted against traders for selling adulterated food and food not of the nature demanded by the purchaser; resulting in the imposition of $13,378 fines and costs.

Of the warnings issued, several were in respect of casein in sausages, for pork and beef sausages containing meat other than that descriptive of the product; meat pies for deficiency of meat content and also for insufficient vitamin C in fruit juices.

SEIZURES

A total of over 121 tons, including large quantities of cheese and dates were seized and destroyed, in addition to 5,224 head of poultry, 150 doz. cartons of prawns, 1,028½ doz. cans and 315 gallons of foods being unfit for human consumption.

PREMISES

Of 3,884 premises used for the storage, preparation or sale of food inspected, 88 notices were served on occupiers of premises which required some remedial action in the way of structural repairs or other defects to comply with the provisions of the Act and Regulations.

Twenty-three traders who failed to keep premises clean were convicted and fined a total of $3,522.

GENERAL BREACHES

One hundred and eight convictions were recorded and traders were fined a total of $4,732. Forty-one were fines for exposing food to dust and flies during delivery, thirty-two for smoking whilst preparing food, thirteen for unwrapped food exposed on counters, five for failing to keep premises free from cockroaches. Other breaches included selling unlabelled oysters, fly-infested premises and selling butcher's meat, not prepacked, in delicatessen shops.

COMPLAINTS

Complaints made by members of the public numbered 2,143, many of which resulted in legal proceedings against food traders and persons delivering food in contravention of the Regulations.

INSPECTION OF DEPARTMENTAL HOSPITALS, CHILD WELFARE AND CORRECTIVE SERVICES ESTABLISHMENTS

Advice on food matters was given by means of inspections and reports to thirty-four departmental hospitals, Child Welfare and Corrective Services establishments.

LEGAL PROCEEDINGS

The total number of prosecutions instituted was 348 and fines and costs amounted to $21,632.

AMENDMENTS TO REGULATIONS

Standard for oysters.
Use of trailer vehicles for the carriage of milk.
Standard for dripping and edible tallow.
Provision for use of carpet on floor of certain parts of premises.

OVERSEAS VISITORS

Miss P. Subhapongse, Food and Drug Inspector, Ministry of Health, Thailand.
Mr M. L. Kamboj, Sanitary Inspector, N. Delhi, India.
Mr P. C. Misra, Sanitary Inspector, Orissa, India.
Mr H. A. Meddegama, Public Health Inspector, Ministry of Health, Ceylon.
Mr S. M. B. Perera, Public Health Inspector, Department of Health, Ceylon.

PUBLIC RELATIONS

The Chief Food Inspector addressed thirteen health, food industry and service organizations, and was interviewed on Radio 2GB and 2UW.

COMMITTEES

The Chief Food Inspector is a member of the following committees which held meetings during the year and which he attended:

National Health and Medical Research Council's Food Standards Committee.
Pure Food Advisory Committee (Advisory member).
New South Wales Health Week Council.
Department of Technical Education's Baking Trades Advisory Committee.
Interdepartmental Committee on Pesticide Residues in Food.
Advisory Committee to the Department on Service of Frozen Food in Hospitals.

TABLE 1—SUMMARY OF WORK PERFORMED BY PURE FOOD BRANCH (CENTRAL ADMINISTRATION) FOR THE YEAR ENDING 31ST DECEMBER, 1971

Food (other than Milk)	
Number of samples taken	2,484
Number below standard	415
Number of warnings	200
Number of prosecutions	215
Amount of fines and costs	$13,286.00
Milk	
Number of samples taken	673
Number below standard	3
Number of warnings	1
Number of prosecutions	2
Amount of fines and costs	$92..00

TABLE 1—*continued*

Samples Field Tested

Meat (fresh)	3,376
Spirits	1,417
Total	4,793

Food Unfit for Human Consumption, Seized and Destroyed

The seizures and destructions comprised over 121 tons, 150 dozen cartons, 315 gallons, 1,028½ dozen cans of foodstuffs and 5,224 head of poultry.

Inspection of Premises Used for the Preparation, Sale and Storage of Food

Number of inspections	3,884
Number of warnings	88
Number of prosecutions for unclean premises	23
Amount of fines and costs	$3,522.00

Particulars of General Breaches of the Pure Food Act and Regulations

Number of prosecutions	108
Amount of fines and costs	$4,732.00

Other Matters

Number of complaints investigated	2,143
Inspections of government institutions and departmental hospitals	34

TABLE 2—SUMMARY OF LEGAL PROCEEDINGS, 1971

Offences under the Pure Food Act and Regulations	Number of Prosecutions	Amount of Fines and Costs
		$
Adulerated food	215	13,286.00
Adulerated milk	2	92.00
Unclean premises	23	3,522.00
General breaches	108	4,732.00
Other Acts—	..	
Totals	348	$21,632.00

FOOD SAMPLES

Particulars of Samples of Food Taken for Analysis by Officers of the Food Branch during 1971

Samples	No. of Samples	No. of Warnings	No. of Prosecutions	Fines and Costs
				$
Ales and Beer	40	....	....	....
Bacteriological	232	19	....	....
Bread	11	....	....	....
Butter	25	....	3	51.00
Condiments and Sauces	20	....	....	....
Confectionery	14	....	....	....
Cordials, Juices and Drinks	142	2	....	....
Cream and Cream Mixture	59	....	....	....
Egg pulp	10	....	....	....
Essences	7	....	....	....
Fats and Oils	22	....	....	....
Fish (fresh and canned)	280	....	3	204.00
Fruit	16	....	....	....
General—Miscellaneous	92	....	....	....
Honey	2	....	....	....
Ice Cream and Ices	27	....	4	618.00
Margarine	20	....	....	....
Meat and Manufactured Meat	1,357	162	205	12,413.00
Meat (Malachite tested 3,376)	....	....	....	....
Meat Pies	27	15	....	....
Milk	673	1	2	92.00
Nuts—Peanuts	22	....	....	....
Spices	12	....	....	....
Spirits and Wines	30	2	....	....
Vegetables	17	....	....	....
	3,157	201	217	$13,378.00

Seizures

Particulars of Food Seized as Unfit for Human Consumption and Destroyed during 1971

Food	Tons	Cwt	Qrts	Lb	Other Amounts
Butter	2	15	2	8	
Coca Beans	3	10	..	..	
Confectionery	1	10	..	10	
Cheese	74	15	..	..	
Fish and Prawns	8	3	2	..	150 dozen cartons
Fruit	27	1	..	24	
Fruit Juice and Drinks	..	..	..	..	265 gallons
Groceries, Assorted	2	3	3	..	
Meat Canned	..	..	..	..	30 cans
Milk Condensed	..	..	..	..	50 gallons
Nuts	1	7	2	..	
Olives	..	10	..	..	
Poultry	..	..	..	..	5,224 head
Soup	..	..	..	..	1,026 dozen cans
Vegetable	..	1	1	4	
Total	121	17	3	18	150 dozen cartons 315 gallons 1,028½ dozen cans 5,224 head

Particulars of Inspections by Officers of Pure Food Branch During 1971

District	No. of Inspections	No. of Warning Notices	No. of Prosecutions	Fines and Costs
Ashfield	86	3	..	..
Bankstown	154	8	..	..
Botany	109	5	..	..
Burwood	68	3	1	152.00
Canterbury	127	4	..	..
Concord	25	1	1	77.00
Drummoyne	36	..	..	..
Hornsby	138	2	..	..
Hunter's Hill	23	1	..	..
Hurstville	96	4	3	346 00
Kogarah	53	..	..	..
Ku-ring-gai	135	..	..	..
Lane Cove	88	..	..	..
Leichhardt	64	4	1	152.00
Manly	59	..	..	..
Marrickville	157	7	..	..
Mosman	84	..	..	..
North Sydney	166	8	..	..
Randwick	395	3	..	..
Rockdale	130	2	..	..
Ryde	110	2	4	358.00
South Sydney	107	3	..	..
Strathfield	26	1	..	..
Sutherland	146	1	..	..
Sydney	688	11	5	718.00
Warringah	40	5	..	..
Waverley	176	4	6	1,365.00
Willoughby	169	2	..	..
Woollahra	222	3	2	354.00
Broken Hill	7	1	..	..
Totals	3,884	88	23	$3,522.00

PARTICULARS OF GENERAL BREACHES OF THE PURE FOOD ACT AND REGULATIONS UNDERTAKEN DURING 1971

Offence	Number of Prosecutions	Fines and Costs
		$
Smoking in food premises	32	1,270
Unlabelled oysters	3	46
Unnecessary food handling	2	44
Food including bread exposed to dust	41	1,546
Unwrapped food exposed on counter	13	391
Fly infested premises	3	186
Cockroach infested premises	5	698
Refuse to state name and place of abode	1	32
Carry food in "boot" of car	1	62
Unclean receptacles	1	52
Unclean delivery vehicle	1	252
Butcher's meat sold in delicatessen shop	3	96
Pets meat not in hermetically sealed cans	1	37
Sell unwrapped bread in butchery	1	20
Totals	108	$4,732.00

PRIVATE HOSPITALS BRANCH

Medical Officer-in-Charge: J. R. RADCLIFF, M.B., B.S., D.A., F.F.A.R.C.S.I.

Location: 47–53 Macquarie Street, Sydney

The functions of the Private Hospitals Branch continued unchanged during 1971. The Branch supervises private hospitals and rest homes in accordance with the licensing provisions of the Private Hospitals Act and Regulations. The non-clerical staff at Central Administration consisted of one medical officer-in-charge and three triple-certificated supervisory sisters.

Premises are routinely inspected twice annually, and additionally for licensing new or altered premises, to give advice, in the event of complaint, and to determine requirements for transfer of licence.

Discussions are held with licensees and their architects in regard to new buildings or alterations. The Board of Fire Commissioners render valuable service by inspecting all plans and by inspecting premises on request.

The licence of one rest home was revoked during the year. The licensee appealed to the District Court which upheld the revocation.

The Private Hospitals Act was amended during the year, the principal effect of which is to transfer administration of the Act from the Board of Health to the Hospitals Commission of New South Wales. The transfer is expected to be effective on 17th March, 1972.

SUBMISSIONS TO THE BOARD OF HEALTH

The following table shows the number of items submitted for consideration by the Board of Health at its monthly meeting, for the last 5 years.

	1971	1970	1969	1968	1967
New licences	45	22	25	16	20
Transfers of licence	48	55	64	65	79
Amendments of licence	105	128	116	151	149
Appointments of resident manager	287	252	292	267	307
Plans submitted	167	198	197	164	183

Inspections carried out in the metropolitan area in the last 6 years have been as follows:

	1971	1970	1969	1968	1967	1966
By Supervisory Sister	885	834	941	954	943	853
By Sisters with Medical Officer	123	134	140	145	127	94

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METROPOLITAN AREA

This area has been increased during the latter part of the year by inclusion of the City of Blue Mountains which was formerly part of the Western Health District.

At the end of 1971 there were in the metropolitan area 86 private hospitals with 3,239 beds and 258 cots, and 374 rest homes with 17,517 beds and 190 cots.

HEALTH DISTRICTS

There were, at the end of 1971, 27 private hospitals with 620 beds and 39 cots, and 76 rest homes with 2,618 beds.

Year	Private Hospitals		Rest Homes	
	Beds	Cots	Beds	Cots
1961	4,131	191	5,680	58
1962	4,295	231	6,399	58
1963	4,619	252	7,497	49
1964	4,477	266	8,584	55
1965	4,433	273	9,358	71
1966	4,389	284	10,758	87
1967	4,271	412	11,633	113
1968	4,090	413	13,090	88
1969	3,925	352	14,838	172
1970	3,709	322	17,024	155
1971	3,866	297	20,135	190

The principal feature of 1971 was a revival of interest in the provision of private hospital beds which had been steadily declining.

DIVISION OF HEALTH EDUCATION

Director: S. J. KRISTER, O.St.J., M.R.C.S., L.R.C.P., D.P.H., D.I.H., F.A.C.M.A.

Address: 9–13 Young Street, Sydney

STAFF AT 31st DECEMBER, 1971

	Permanent	*Temporary*
Professional Division	12	4
General Division	12	8
Clerical Division	4	2
	28	14

NEW DEVELOPMENTS

In consequence of the expansion of health education services during the past 2 years the Public Service Board this year approved a reorganization of the Division. It will improve the quality of service given by the Division as well as providing better career prospects for professional and field staff. An Assistant Director has been appointed to assume charge of health education projects in the community.

For the first time, a full-time health education officer was established to develop programmes for Aborigines.

A survey was carried out of the health education activities, needs and potential of the Division of Occupational Health and Pollution Control. A study was made of the activities of each officer of the Division and recommendations were made for the further development of the health education activities of the Division.

A detailed proposal was also prepared for establishing a food hygiene education service in the Pure Food Branch.

A migrant health education programme was introduced to meet the needs of major ethnic groupings for adapting to the Australian environment, making effective use of available services, promoting child and family health and improving chest X-ray response. The first major emphasis in this programme was to boost immunization among migrant children and a gratifying response was noted at the local government clinics in the areas affected.

OVERSEAS VISITORS

The following overseas visitors were received during the year:

Miss Leonie Martin, Health Education Consultant, WHO, Geneva.

Mr John Hannam, Director of Central Narcotics Bureau, Singapore.

Dr L. P. Villafranca, Director of School Dental Services, Manila.

Dr L. Zamora, Health Education Advisor, Ministry of Health, Philippines.

ORIENTATION PROGRAMMES FOR OTHER STATES

The following officers of other States visited the Division to study the New South Wales health education organization:

Dr J. Soong, Northern Territories Health Service.

Mr I. Frensham, Miss J. Grimond } A.C.T. Health Services.

Dr G. Milner, Commonwealth Department of Health, Drug Dependence Section.

Dr D. Sawyer, Victorian Health Department.

Mrs R. Tatom, W.A. Mental Health Authority.

Mr P. Iveson, Mr J. Flood } W.A. Health Education Council.

APPOINTMENTS

The Director was appointed to the Minister for Education's Committee of Inquiry into Sex Education in Schools.

Miss Creighton was appointed to the Department of Education's committee to implement road safety education in schools.

The Director was appointed as short-term consultant to the Indian State of Andra Pradesh by the World Health Organization. The assignment had to be deferred due to the crisis situation in India and Pakistan.

HEALTH EDUCATION ADVISORY COUNCIL

Needs of Patients in Hospitals

The Council undertook an investigation into the needs of hospital patients for educational programmes to assist them in surmounting and recovering from disease and its social consequences.

An initial report recommending that hospitals establish appropriate information, attitude changing and skill training programmes for patients was prepared and forwarded to the major medical, nursing and administrative institutions for their views. The Hospitals Commission has indicated that it is prepared to consider policies which will permit hospitals to introduce appropriate communications and educational activities for patients, together with appropriate staff training when the report has been evaluated by the various expert bodies.

School Health Education

Council organized a major conference of all concerned authorities to review progress in school health education to date and to recommend such initiatives as may be necessary to meet the objective that all school children and teachers are receiving an adequate preparation in health education by the end of the decade. The conference was held at the centre for the Advancement of Teaching at Macquarie University.

Family Life and Sex Education

Noting the need in the community for a more structured approach to preparation for family life and sex education the Council collaborated with the Marriage Guidance Council of N.S.W. in convening a conference of all public and voluntary authorities providing services of this nature with a view to establishing community needs and developing co-operation between agencies in meeting them effectively and economically.

HEALTH EDUCATION TRAINING

Training was again a large component of the Division's services. The following activities were undertaken:

(a) A 3-week course for the newly appointed team of health education staff of the mental health and drug education section.

(b) A series of 4-day workshops for part-time session leaders, known as approved educators, to carry out community education activities in the drug education and migrant education programmes. Approximately seventy such persons from a variety of professional disciplines attended the courses.

(c) Continuing education workshops on various health education topics were offered in a series of eight afternoon and weekend programmes. The courses were well-attended by health education staff, other departmental officers, approved educators and nominees of health and welfare agencies.

(d) Two courses on use of teaching aids in health education and on teaching techniques were held for the staff of the Dental Health Education and Research Foundation.

(e) Fourteen health surveyors attended the postcertificate course in Health Education of the Department of Technical Education which is staffed by this Division. A total of eighty-six health surveyors in Sydney, Newcastle and Wollongong have now completed this course and form a valuable group for health extension activities in local government. Seminars were planned for interested aldermen to take place in 1972.

(f) Country workshops were held in Newcastle and Wollongong to train approved educators for local drug education programmes.

(g) As an introduction to a permanent series of modern social and health issues seminars for senior school pupils, two 1-day seminars on pollution and drug abuse were held at Lidcombe Hospital for a large number of students from metropolitan public and private schools. The general format for these seminars is to:

  (i) invite all secondary schools to nominate participants;

  (ii) issue each participant with preseminar reading material and assignments;

  (iii) hold a seminar for 1 or 2 days;

  (iv) carry out tutorials during the fortnight following the seminar for small groups of participants;

  (v) encourage each participant to carry out some activity at his school, e.g., talk to fellow students, a project, a seminar for P. and C. groups;

  (vi) obtain reports of past seminar activities for evaluation and follow-up with individual schools.

  In an evaluation carried out 1 month after the pollution seminar, over 70 per cent of the participants had carried out some activity.

(h) Five workshops were held for more than eighty teachers to assist in the Department of Education's drive to provide at least one well-informed teacher in the field of drug abuse in each high school in the State.

(i) Three 1-day courses in health education for nurses working with the Aboriginal population were conducted at the Ryde training school.

(j) Five parent education courses were conducted, two at kindergartens in Ryde, one in Epping, one in Beecroft and one in West Pennant Hills. These courses were arranged for community organizations by the Senior Health Education Officer, Ryde. The West Pennant Hills experimental courses were especially popular and the local parent group is to continue with them. Principals from surrounding schools attended the sessions held at West Pennant Hills and expressed a wish to introduce them for all parents at their schools.

(k) Eighty-five nutrition lecture sessions were conducted for students in various training courses—at training colleges, inservice courses and universities. These groups included trainee kindergarten and nursery school teachers; public health, community and mothercraft nurses; trainee child welfare and probation officers; nurse educators, nursing administrators and occupational health nurses at the College of Nursing; dental health nurses and dietetic students.

(l) Continued contact has been maintained with the food service industry and advice on educational programmes has been supplied to management. Assistance was provided for several hospitals on the development of food hygiene programmes. There is urgent need in this field for a full-time health education officer in view of the potential and need for food hygiene programmes in the industry.

(m) A series of lectures on health education was given to the Industrial Health Nurses course at the College of Nursing.

(n) Sessions on health and nutrition were introduced at two modelling and deportment colleges on an experimental basis.

(o) Three courses on Health Education for Mothercraft Nurses were held during the year. Two at the Sydney University and one at St Anthony's Home, Croydon.

SCHOOL HEALTH EDUCATION

(a) The following *Teacher Guides to Health Education* were completed in 1971:

(1) Use of Drugs—(Alcohol, Tobacco and Other Substances with Potential for Misuse).

(2) Family Life—(Sociology of the Family, Growth and Development and Human Sexuality).

(3) Safety—(Commuter, Recreational, School and Occupational aspects and First-Aid).

Teachers in several schools throughout the State participated in field testing of the units on "Drugs and Family Life" during second and third terms, 1971. In the light of comments made by teachers involved in the pilot scheme and by other committee members, the *Guide* on "Use of Drugs" was amended, approved by the Department of Education and forwarded to the Government Printer. Fourteen teaching charts to accompany the "Drug and Family Life" units have been designed and seven are in the course of production.

(b) *Educational Games:* Consideration was given to the possible use of educational games to excite curiosity and interest in certain health topics and an experimental dental game, "Teeth", was devised. This development may have considerable practical value in programmes for young children.

(c) *Syllabus Aids:* Materials required for fifth and sixth form Health Education syllabus committees were prepared.

(d) *Student Projects:* Other activities for school students included health discussions on thirty-three occasions. Five health sessions were held for youth education seminars, four for students in tertiary institutions and two for groups of seminarians.

(e) *General Schools Liaison:* There was continuous liaison with the Department of Education's Primary and Secondary Health Advisors, participation in teacher inservice training courses and provision of information and resources on request by teachers from many public and private schools.

COMMUNITY EDUCATION

Nutrition

The year's programme was based on promoting nutrition education through key groups in the community, such as the press, community nurses, students in various fields and nursery school directors.

Each week nutrition articles on varying topics were written for country and suburban newspapers, and radio stations. Also, nutrition pamphlets on many topics were made available statewide on request.

During the year many of the pamphlets were reviewed and revised as reprinting became necessary. New pamphlets prepared included economical hints for meal planning and suggestions for tempting low calories dishes. Many items were revised, in particular the individual prenatal diet sheets and the chapter on nutrition in Healthy Motherhood. Technical assistance was given to the Australian Meat Board for three new posters and a leaflet on packed lunches.

Direct contact was made with the community through talks requested by sixty groups. These included Mothers' Clubs, P. and C.'s, View Clubs, Weight Watchers Clubs and other organizations. In addition, the Sydney Day Nursery Schools' Association arranged for 2 half-day workshops, one for committee members of their nursery schools and the other for the directors, matrons and cooks of their schools. The health education officer of the Western Metropolitan Health District arranged a half-day conference for managers and organizers of school canteens of a third of the schools in the area. Great interest was shown in this programme by the schools which participated.

One hundred and eighteen nutrition sessions were conducted for women attending preparation for parenthood classes, relating to the individual and the family. Eighty-five per cent of these sessions formed part of the departmental series of classes, and the remaining 15 per cent were arranged by the Australian Mothercraft Society at Karitane, Woollahra.

Each week, four departmental prenatal clinics were attended by a dietitian; an average of twenty-five to thirty mothers attended. These clinics were held at Manly, Dee Why, Liverpool and Parramatta.

Many doctors in private practice in various parts of the State as well as the metropolitan area used the section's therapeutic diet service. The Department's *Medical Newsletter* publicized the service and in particular drew attention to the availability of diets suitable for hyperlipidaemia. Individual diet prescriptions were dealt with by correspondence or personal interview depending on circumstance.

The child obesity clinics at Forest Lodge and Eastern Suburbs Child Health Centres offered a special service throughout the school year.

Numerous written and verbal inquiries (mainly by mail and telephone) on all aspects of nutrition were attended to throughout the year.

A special consultant service and training programme was arranged for welfare officers of the Smith Family.

Finally, nursery schools of the Sydney Day Nursery Schools Association used the section's food service consultant service throughout the year. A total of fourteen visits was made to these schools. The association's executive and individual nursery school committees as well as staff showed increased interest in the nutritional and educational aspects of the food provided for the children in their care.

Mental Health and Drug Education

During the year, the newly formed drug education section established training, consultative and technical information services, the latter to a wide circle of legislative, health, educational and civil institutions and individuals. These support services were made available to field staff appointed to organize community participation to prevent drug abuse in five metropolitan areas and to community organizations in Newcastle and Wollongong.

In each area, four objectives were sought, viz.:

(1) Involvement and further education relative to the causes and prevention of drug abuse of professional, health, welfare, teaching, religious and other groups.

(2) Establishment of informed discussion, by civic and youth-involved personnel and parents of the drug abuse phenomenon.

(3) Promotion of youth discussion of social issues related to drug abuse and dependency.

(4) Advisory services for youth involved in drug using subcultures or their parents.

Close collaboration was maintained with the Department of Education and an important experiment in senior pupil involvement in the problems of younger pupils was begun in a high school where drug abuse had become a problem.

The early results were promising and other schools have adopted the proposal.

A baseline survey of random households was begun in two of the areas where intensive programmes had been established with a view to measurement over a period of time of drug usage and attitudes toward drug use and users.

The programme was again supported by a Commonwealth Grant.

Smoking and Health

The Department continued to support the work of the Australian Council on Smoking and Health both financially and in terms of consultative and other direct services.

Press articles and displays on smoking and health were issued throughout the year in furtherance of the departmental policy to advise the general public and particularly youth of the harmful effects of excessive cigarette smoking.

School Health Education Programme on Smoking

The Cancer Council's teaching programme on smoking and health in State and private schools was extended in accordance with the recommendations of the Health Education Advisory Council. These recommendations were:

(1) The class should be the unit of instruction, rather than a whole school assembly.

(2) The instruction given should be programmed within the health syllabus. It should therefore seek to make a specialist contribution rather than to be regarded as the whole of the teaching in this area.

(3) Efforts should be made to precede the teaching given to children by an appropriate orientation of the teaching staff of the school. The topic would then be reinforced adequately by class teachers after the individual talks had been given by Council's lecture staff.

Discussions with P. and C. groups have taken place in schools where doctors have lectured to schoolchildren.

Smoking Project in Co-operation with the National Heart Foundation

A programme relating to the health effects associated with smoking was conducted in a number of teachers' colleges involving lectures to student teachers, who are considered to have an important exemplar role within the school and the community. The programme was aimed at encouraging student teachers to adopt positive attitudes towards discouraging cigarette smoking among schoolchildren. Joint sponsorship of these seminars for trainee teachers by the State Cancer Council and the National Heart Foundation added greatly to the value of the seminars. The programme included the following non-government teacher training colleges:

Mount St Mary Training College, Strathfield.

Guild Teachers College, Sydney.

Marist Brothers Teachers' College, Dundas.

Catholic Teachers' College, North Sydney.

Family Life Education

Several meetings culminating in a 1-day seminar on family life education were arranged to seek collaboration between all the community agencies concerned in this field. This work is continuing.

Migrant Health Education

Twenty approved educators, fluent in six of the major migrant languages, were employed on a sessional basis after appropriate training to conduct group discussions on child health, immunization health services available in the community and other topics of importance to new immigrants. A very good response was obtained to the Department's annual immunization publicity campaign in the areas where the approved educators were active.

Home Accident Prevention

A departmental Committee to Investigate Accidents to Children was formed this year and the senior health education officer, Ryde pilot project, was appointed secretary for the Committee.

This Committee conducted a survey into the number of children reported by hospitals in N.S.W. as accident cases.

Cancer Education

(a) *Schools:* During the year there was a gradual development of the State Cancer Council's public education programme with regard to schoolchildren.

This was carried out at two levels:

(a) 5th and 6th grades in primary school;

(b) 1st form in secondary school.

(b) *Public Departments:* A fresh development was the approval of the Public Service Board for Council to organize lunch-hour lectures for public servants in various departments.

The following table indicates the extent of the education programme during 1971:

	No. of Lectures	Males	Females	Mixed	Total
Schools	1,695	8,185	12,870	39,131	60,186
Teacher Training Colleges	4				
Nurses	43				
Public Service	81	1,508	2,696	4,328	8,532
Industry	2				
Country Groups	168				
Totals	1,993	9,693	15,566	43,459	68,718

(c) *Hospitals:* A programme of cancer prevention was initiated for staff members of hospitals at three levels:

(1) Graduate nurses, having regard to their role as community opinion leaders and also their exemplar role with patients;

(2) Student nurses, the emphasis being placed on the hazards associated with smoking and the exemplar role in relation to the peer group;

(3) Lay staff. Lectures were given in the following hospitals:
Balmain District Hospital.
Bankstown Hospital.
The Children's Hospital.
Canterbury Hospital.

(d) *Banks:* During the year lectures were arranged and given to employees of the following banks:
Reserve Bank.
Bank of New South Wales.
This programme will continue throughout 1972.

(e) *Police Department:* The senior police medical officer undertook a cancer education programme for the 7,000 policemen in New South Wales through existing police training courses.

Police Boys' Clubs: A health education programme orientated toward the dangers associated with smoking and care of the skin in relation to cancer was organized and carried out at the following Police Boys' Clubs:

Sutherland Shire Police Boys' Club.
Parramatta Police Boys' Club.
St George Police Boys' Club.
Camp McKay Police Boys' Club.

(f) *Community Groups:* Talks were also given at more than sixty service clubs and church and community groups.

Hydatid Disease

A hydatid disease education and control programme was introduced incorporating a series of pilot control projects in selected areas of N.S.W. Pilot areas included Cootamundra, Boorowa, Queanbeyan, Crookwell, Yass, Gunning and Goulburn. These activities led to a statewide rise in interest in the control of hydatid disease and associated parasites. In each area the programme for graziers and the local community became self-sustaining with little assistance from the Department of Health. Hygienic dog feeding, offal disposal and dog control have proved to be relatively acceptable to graziers with the backing of a local committee or of the shire council.

Plans were put in hand to establish a chain of control zones throughout the State wherever hydatid disease is a serious health hazard.

Health Districts: Health Education Officers

The duty of Health District liaison officer was allocated to a senior health education officer who made a number of visits to the Western, South Coast, Riverina, Newcastle, Northwestern and North Coast Health Districts to assist the Medical Officers of Health with health education policy and planning.

It has become obvious that while the Medical Officers of Health and their staff of these districts have many needs for the practice of health education, there is little hope of effective programmes until a health education officer is posted to all districts. The lack of a trained officer led to submissions being made by several Medical Officers of Health during the year requesting that priority be given to establishment of these posts. Only two of the health districts, Western Metropolitan and South Coast, have health education officers at the present time. Within each of the two districts, it was possible to largely decentralize health education services.

Collaboration with Government Departments and Voluntary Agencies

An important part of Division officers' time is spent in discussions and consultation with other agencies involved in health education. While much of this activity was informal, the exchanges of information and ideas were an important part of any year's achievements.

The Division was able to contribute to appropriate educational activities of the Police Drug and Crime Prevention Branches, the Traffic Safety Division of the Department of Motor Transport, the Child Welfare Department, the Education and Technical Education Departments, the Consumer Affairs Bureau, the Department of Labour and Industry and the Directorate of Aboriginal Affairs.

As in previous years, the Division provided consultation, training assistance and physical resources to assist the Dental Health Education and Research Foundation, the National Heart Foundation, the Red Cross Society and Junior Red Cross, the Marriage Guidance Council, Family Planning Association, Family Life Movement of Australia, Australian Council on Smoking and Health, Youth Education Seminars and other bodies concerned with health.

The Division maintained a regular information service for the Australian Medical Association, Australian Dental Association, the press and broadcasting media, community agencies and individuals seeking advice on various health matters.

RESEARCH

Attitudes to Mental Illness and Services for the Mentally Ill Obtained from Research on Mental Illness Attitudes

The data was analysed and a report prepared for the guidance of the Health Education Advisory Council in considering the possible need for education programmes concerned with improving utilization of the mental health services and the prevention of some forms of mental illness.

The research officer presented a thesis for the degree of Ph.D. based on the research to the University of New South Wales.

Relationship of Contemporary Music to the Drug Abusing Subculture

A study of possible relationships between preferences for various types of contemporary popular music and attitudes and practices of musicians and adolescents towards use of drugs was carried out to provide information on the current influence which such music may have upon youth. Results are being analysed.

Household Survey of Drug Usage and Attitudes

A random study of households in Manly and Sutherland was initiated to determine baselines of behaviour and belief regarding drug use and users before introduction of the community drug education programme. The intention was to provide a basis for measurement of changing attitudes and behaviour over the next few years.

Review of Agency Health Education Interest and Activity

A postal survey of the current interest and activity of 200 community health and social agencies was carried out to determine how well or otherwise departmental health education services were meeting needs of such organizations.

As a result numerous requests have been received to provide more communication, consultative and training facilities and steps have been taken to initiate these.

Efficacy of Health Education Teaching in Schools

In collaboration with the Department of Education a 3-year comparative study of the outcomes of different teaching methods in the health education curriculum of secondary schools was begun.

It seeks to compare the health outcome for three comparable groups of first-year students who will have been exposed to one of three different conditions for three years. One group will receive a pupil-centred style of teaching, one a typical teacher-centred approach and the third will have had no formally taught health subject. Four behavioural indices of health taken at the outset and the end of the three-year period will measure any observable change.

HEALTH INFORMATION SERVICES

The post of Publicity Officer was regraded to that of Officer-in-Charge, Information Services, Professional Division, in consequence of the greatly increased scope of the technical information, publicity, audio-visual communication and other informational activities of the Department in recent years.

Services for the press, radio and television and requests for film screenings and displays were improved by an internal reorganization of the Information Services Section.

Special publicity was given to an outbreak of diphtheria, the opening of the new forensic laboratories, the Queenscliff Health Centre development, the diagnostic unit for the Far West Children's Health Scheme and the immunization programme.

Closer liaison established with medical roundsmen and editorial staff led to a fuller mass media coverage than in previous years on many aspects of health education. For example, following a WHO report on the world increase of V.D. and the opening of the Women's Clinic Services at Alfred Street a number of feature articles were arranged in the metropolitan daily newspapers and women's magazines. Television appearances were organized and radio broadcasts arranged for appropriate professional staff of the Department. In all a considerable amount of space and broadcasting time were made available to the Department.

During the Murray River Pollution Survey early in 1971, a team of journalists was organized to visit Albury and surrounding districts. As a result of the visit, effective liaison was established between departmental and local government health authorities and media representatives both local and State.

Publications

It has been most difficult and at times impossible in a time of economic stringency to meet the increasing demands for printed material by schools, local government authorities, baby health and child health centres, medical practitioners and the general public. Economy measures also resulted in a pronounced downgrading of the quality of departmental brochures.

A new type of illustrated publication for primary school children engendered a very heavy demand for supplies from school principals.

Entitled *Why Don't Elephants Smoke*, it is designed to lead the younger child towards making sensible decisions about habits such as smoking, drinking and careless use of drugs. The pamphlet has been recommended for national production by the Health Education Subcommittee of the National Health and Medical Research Council.

Health Record Cards

Large numbers of personal medical record cards, immunization cards and rubella vaccination cards were distributed on request both from the Bulk Store and Health District depots. A new type of child record card which should make the task of parents in recording immunization easier was produced.

Periodicals

The Department Journal *Health in N.S.W.* (circulation 22,000) and quarterly *Newsletter to Medical Practitioners* (circulation 8,000) continued to be published regularly. *Informed Opinion* and a bulletin of abstracts of current literature, publications produced quarterly for the drug education programme have been added to the list of departmental periodicals.

Films

The demands on the Department's film library have increased so much that, in spite of a considerable number of new films and extra copies of popular films, would-be borrowers had to be disappointed on a number of occasions. Health education teachers, teachers' colleges, government departments, institutions, service organizations and local authorities were the most active users of the film library.

Special Campaigns

An intensive immunization campaign to encourage school beginners to obtain booster doses before starting school was conducted during January with particular success in the case of foreign language programmes.

Rubella vaccination of junior high school girls was conducted throughout New South Wales and was supported with a suitable publicity campaign.

The National "Health Week" Campaign was as usual arranged in conjunction with the N.S.W. Health Week Council, local authorities, government and community organizations.

Exhibitions and Displays

A number of displays, including the "Mines Safety" display at Newcastle, "Health Week" display in the Commonwealth Bank, "Old People's Week" and the R.A.S. Easter Show were arranged and a number of smaller exhibits were produced. These included support displays for inservice training.

Country Shows

Assistance was given with the development of a number of health displays at rural shows. Show exhibits were held at Cootamundra, Crookwell, Gunning, West Wyalong, Canberra, Queanbeyan, Goulburn, Bundendore, Walcha, Glen Innes and the Albury Trade Fair. Subjects included "Pollution", "Industrial Safety", "Immunization" and "Hydatid Control".

For economic reasons, the "Waratah Spring Festival" float was discontinued.

Teaching Aids

The Visual Aids Section designed and produced posters, charts and slides on a variety of subjects and prepared material for the production of teaching charts for the Education Department's health education syllabus. Amongst these was an important new series entitled "Family Life".

Arrangements were made to acquire two mobile caravans surplus to the requirements of the tuberculosis chest X-ray programme. These units are being converted as mobile health education units for use in country areas. They will be used in local government health education campaigns, in special displays in teachers' colleges and schools and for departmental public information programmes.

Public Relations

Fresh attempts were made to widen the understanding of the media concerning the many services of the Department to improve public understanding of the Department and its functions.

MEDICAL EXAMINATION CENTRE

Director: Dr J. M. Orr

Location: 86–88 George Street North, Sydney

ESTABLISHMENT

1 Director
1 Senior Medical Officer
5 Medical Officers
4 Nursing Sisters
2 Clerical Officers
2 Shorthandwriter/Typists
8 Office Assistants
2 Clerical Assistants
2 Visiting Psychiatrists, part-time
1 Visiting Cardiologist, part-time

FUNCTIONS

The Centre has continued to expand its function and is requested to carry out an increasing volume of work. Service is now provided to eighty-three public service and allied service departments.

MEDICAL EXAMINATIONS

Teachers and Trainee Teachers

The following examinations have been carried out at the Medical Examination Centre:

	1970	1971
Full medical examination of teachers' college entrants ..	222	520
Medical examination to determine fitness for permanent appointment and admission to the State Superannuation Fund ..	1,587	2,506
Examination to determine fitness for employment as temporary or casual teachers	8	17
Sick leave and fitness to continue examinations	165	105
Review examinations and re-examinations	75	117
Psychiatric examinations	643	683
Cardiologist examinations	126	88
Fitness to resume duty	..	16
	2,826	4,052

The results of the following examinations were also assessed at this Centre:

	1970	1971
Students seeking entry to teachers' college	3,611	6,100
Students graduating from teachers' college	2,507	2,975
	6,118	9,075

The Centre also arranged for the following examinations of teachers to be carried out in country areas, interstate or overseas and the results then assessed:

	1970	1971
Examinations for permanent appointment and admission to the State Superannuation Fund	795	433
Examination of applicants for employment as temporary teachers	365	197
Sick leave and fitness to continue examinations	122	97
Other examinations including X-ray reviews	731	960
	2,013	1,687

During the year, fifty-two teachers were retired on medical grounds (fifty-eight in 1970). Of these, twenty-six (50 per cent) were retired for psychiatric reasons (twenty-two—38 per cent in 1970) and the remainder for other medical disorders.

The age distribution of these retirements is as follows:

	1970	1971
Under 30 years	6	4
30 to 39 years	5	4
40 to 49 years	9	9
50 to 59 years	36	30
60 years and over	2	5
	58	52

The causes of retirement under the age of 40 years were as follows:

Age	*Sex*	*Medical condition*
22	F.	Rheumatic fever.
22	F.	Nervous disorder.
26	F.	Manic depressive psychosis.
28	F.	Cerebral tumour.
31	M.	Schizophrenic reaction.
31	F.	Schizophrenic reaction.
33	F.	Schizophrenic reaction.
38	M.	Head injuries.

Public Service and Allied Services

The following examinations were carried out at the Medical Examination Centre:

	1970	1971
Medical examination to determine fitness for permanent appointment and admission to the State Superannuation Fund	5,680	6,230
Examination to determine fitness to continue working	221	263
Re-examinations	200	305
Special examinations including fitness to resume following retirement	117	68
Cardiologist examinations	245	181
Police Medical Boards	30	14
Examinations for temporary employment	..	25
Psychiatric examinations	364	350
	6,857	7,436

The Centre also arranged the following examinations in country areas, interstate and overseas and the results were then assessed at the Centre:

	1970	1971
Examinations for permanent appointment and admission to the State Superannuation Fund	1,896	1,867
Examinations to determine fitness to continue working and fitness to resume duty following retirement	405	451
Special examinations and X-ray reviews	2,148	2,028
	4,449	4,346

During the year 151 employees in this group were retired on medical grounds (148 in 1970). Of these, 36 (24 per cent) were retired for psychiatric reasons (28—19 per cent in 1970).

The age distribution of these retirements was as follows:

	1970	1971
Under 30 years	10	11
30 to 39 years	12	12
40 to 49 years	36	28
50 to 59 years	74	83
60 and over	16	17
	148	151

The causes of retirement under the age of 40 were as follows:

Age	*Sex*	*Medical condition*
23	M.	Quadraplegia.
24	M.	Retinitis pigmentosa.
25	M.	Multiple keloids.
25	M.	Schizophrenic reaction.
26	M.	Schizophrenic reaction.

Age	*Sex*	*Medical condition*
27	F.	Schizophrenic reaction.
27	M.	Carcinoma of colon.
27	F.	Anxiety state.
29	M.	Disseminated melanoma.
29	F.	Depressive reaction.
29	M.	Schizophrenic reaction.
30	M.	Hepatic cirrhosis.
31	F.	General debility.
31	M.	Psychoneurosis and duodenal ulcer.
32	F.	Neurotic personality.
32	F.	Lupus erythematosis.
32	M.	Chronic hepatitis.
33	F.	Nervous trouble.
34	M.	Coronary heart disease.
34	M.	Teratoma testis.
34	M.	Chronic psychoneurotic depression.
35	M.	Sequelae of poliomyelitis and intervertebral disc lesion.
39	M.	Cerebral tumour.

Other assessments were carried out as follows:

	1970	1971
Examination of returned servicemen for travel concessions	3,046	2,282
Medical assessments for Metropolitan Water, Sewerage and Drainage Board, Electricity Commission, State and Psychiatric hospitals	1,100	802
Ophthalmic surgeon examinations and aurist examinations	1,735	2,094
Vaccinations	330	238
Electrocardiographs	307	317
Audiograms	393	614
Sick leave certificates for non-pathological conditions	529	595
Assessments for Local Government Superannuation Board	304	227
Vitalograms	..	610
	7,744	7,779

First Aid Centre, State Office Block

During 1971, a total of 1,884 attendances was recorded at the First-Aid Centre in the State Office Block (1,894 in 1970). These attendances comprise 1,047 males (1,016 in 1970) and 837 females (878 in 1970). Of the total number of cases treated, 404 were due to accidents at work (424 in 1970).

COMMENT

In 1971 a total of 1,993 candidates failed to attend for their appointment for examination (2,262 in 1970). The Centre has completed this period with a waiting time for appointment of some 8 weeks.

POISONS BRANCH

Senior Pharmacist: Mr R. M. Dash

Location: 9–13 Young Street, Sydney

STAFF

The staff of the Poisons Branch comprises:

1 Senior pharmacist
6 Pharmacists
1 Clerk
1 Shorthandwriter/typist
1 Typist

FUNCTION

The Poisons Branch administers legislation controlling the manufacture, distribution and use of drugs and poisons. The principal legislation at present administered by the Branch is the Poisons Act, 1966. In November, 1971, a Therapeutic Goods and Cosmetics Bill was introduced in Parliament by the Minister for Health. This legislation will, when enacted, also be administered by the Poisons Branch.

ACTIVITIES

As far as possible, routine inspection of premises where drugs and poisons are handled has continued to be the major activity of Branch staff. The time available for routine inspections has continued to be eroded by an increasing need to devote attention to particular problems. Among those problems have been an increasing interest of medical and allied personnel in addict management and the use of methadone as a substitute for illicit drugs in the initial stages of addict rehabilitation; the continued diversion of drugs of dependence from licit avenues of distribution, through theft, armed robbery and prescription forgery; the development of international and national policies and agreement on drug and poison control and their incorporation in State legislation; and the need to develop means of communicating with groups of people responsible for distributing or authorizing the distribution of drugs.

Use and Abuse of Drugs of Addiction

Section 28 of the Poisons Act, 1966, provides that a medical practitioner must obtain the authority of the Director General to prescribe a drug of addiction for an addict or to prescribe a drug of addiction for more than 2 months for any other person. One of the purposes for which Section 28 was introduced was to provide a means of obtaining some information on the number of addicts in the State. However, information is only obtained about those addicts for whom an application is made for authority to prescribe a drug of addiction. The collection of this information does not constitute the establishment of a register of addicts, nor does inclusion of an addict's name in the Director-General's records automatically permit the addict to obtain a supply of drugs of addiction.

The application of Section 28 of the Poisons Act has failed to produce a complete picture of the extent of addiction in New South Wales, as the records contain no information on addicts who have obtained their drugs entirely from illicit sources. It has succeeded in another direction, however, by enabling a policy on the use of drugs of addiction in addict management to be developed. It also serves a useful purpose by enabling the prescribing of drugs of addiction to be monitored and any undesirable prescribing controlled. Undesirable prescribing in this context may take the form of irresponsible prescribing, although this is rare, or it may take the form of prescribing by well-intentioned practitioners who are being imposed upon by addicts.

Provided all practitioners comply with the requirements of Section 28, any attempt by an addict to obtain drugs simultaneously from several practitioners can be detected and the practitioners concerned alerted. The procedure of applying for an authority provides an opportunity also for addicts to be directed to specialists in addict management for assessment and counselling.

The Poisons Branch provides the facilities for monitoring the prescribing of drugs of addiction and the processing of applications for authority to prescribe such drugs. The collection of data on addicts and long-term users of drugs of addiction can be likened to the collection of data on notifiable diseases. In each case the success of the programme depends upon the co-operation of the medical profession in submitting data on patients under their care. However, the prescribing of drugs of addiction is followed by supply either by the prescriber himself or by a pharmacist on his prescription. This provides a means of auditing the extent to which the data is being supplied, and of reminding defaulting prescribers of their obligation. A system of computor monitoring of transactions in drugs of addiction is operated in conjunction with the Commonwealth Department of Health, and a computor programme is being developed to highlight those transactions that are likely to be associated with prescribing for addicts or long-term users of drugs. The data provided from computor monitoring records will supplement the routine inspection of pharmacy and hospital records, during which a note is made of details where patients have apparently been receiving drugs of addiction for more than 2 months, or where the prescribing of drugs of addiction appears to be part of an addict management programme. Where these sources of information indicate that a medical practitioner may be prescribing a drug of addiction in circumstances requiring the authority of the Director General, the prescriber is reminded of the provisions of Section 28 of the Poisons Act and requested to either complete a form of application for authority to prescribe the drug or advise that he no longer wishes to prescribe the drug.

The number of addicts coming under medical care and for whom authority to prescribe drugs of addiction in the course of their management increased considerably during 1971. Figure 1 shows in graph form the number of addicts who have at some stage been treated by a medical practitioner

and for whom authority has been sought to prescribe a drug of addiction. These figures are cumulative, as addicts are removed from these records only if they have not relapsed for 5 years or have died. Since these records were commenced seventeen have died. As the records do not yet go back 5 years, none have been removed as non-recidivists.

The number of authorities current at any one time does not accurately reflect the number of known addicts, as it is the aim of most treatment regimes to cease drug administration as soon as practicable. However, the number of authorities current at a given time is a reasonable indication of the number of patients with terminal or chronic conditions for which a drug of addiction is indicated. Figure 2 shows the number of authorities current at the end of each year since the Poisons Act, 1966, took effect.

Drug security has been given a high priority in measures aimed at preventing diversion of drugs to the illicit market. During the year under review, there were no reports of theft of drugs of addiction from manufacturers or wholesalers.

This was no doubt due mainly to a tightening of security precautions undertaken in 1970 with the assistance of the Police Crime Prevention Section. Since 1st May, 1971, all retail and hospital pharmacies have been required to store drugs of addiction in a metal cabinet or safe, for which minimum specifications were drawn up in consultation with the Police Crime Prevention Section. There has been a reduction in the number of reports of theft of drugs of addiction following breaking and entering of pharmacies compared with the previous year (1970—380; 1971—227), but a disturbing increase in the number of reported cases of armed hold-up of pharmacies where the contents of the drug cabinet have been demanded (1970—4; 1971—44). As armed hold-up is an indictable offence, court proceedings have been rather protracted, and there was not an opportunity during the period under review to see if sentences being imposed were acting as a sufficient deterrent to influence the incidence of this type of offence.

Convention on Psychotropic Substances

In February, 1972, a new international agreement to control the distribution and use of dependence-producing drugs not subject to the Single Convention on Narcotic Drugs was concluded in Vienna. Under the agreement, known as the Convention on Psychotropic Substances, signatory countries have agreed to implement specific measures to control the distribution and use of hallucinogens, amphetamines and a number of other stimulants and sedatives, to prevent their abuse. Australia has signed the Convention, and it is proposed to ratify the agreement as soon as all necessary control measures have been implemented.

Control over hallucinogens and amphetamines already in force in this State is in accordance with Convention requirements. Control over other stimulants and sedatives is being progressively brought into line with Convention requirements. All stimulants (other than amphetamines) and sedatives listed in the Convention have been prescribed for the purpose of Section 16 of the Poisons Act, 1966, thus making their unauthorized possession an offence. Manufacture and wholesale distribution of these substances will be subject to licence under the Therapeutic Goods and Cosmetics Act, and this will fulfil the remaining requirements of the Convention.

Poisons Prevention

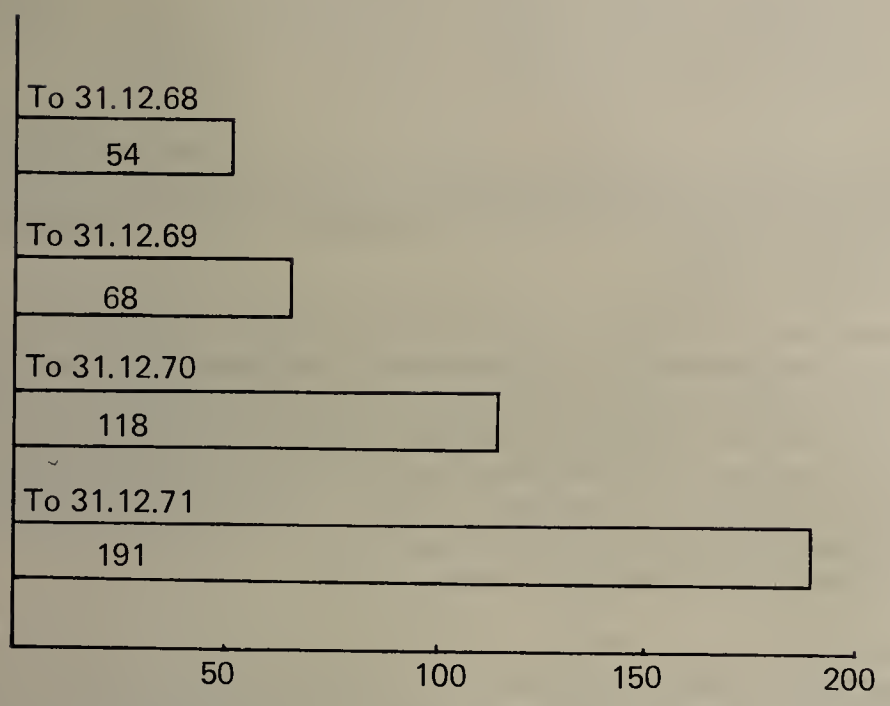
Prevention of poisoning is one of the main objectives under the Poisons Act, 1966. In the case of medicines, one of the methods of preventing accidental overdosage or untoward effects through incorrect use of drugs is to ensure that the more hazardous drugs are available only under medical supervision, and drugs of lesser hazard are available only from pharmacies, where competent advice is available on the effects of those drugs, precautions in use and dosage. The Poisons Branch has maintained a surveillance of data on drugs, both new and old, and has referred problems as they arise to the Poisons Advisory Committee. As a result the Poisons List has been amended on several occasions to accomodate new drugs and reflect new attitudes to old drugs.

Non-medicinal poisons are similarly kept under review, with particular attention being given to developments in the use of potentially hazardous chemicals for domestic, industrial and agricultural use. Improved technology has enabled some toxic chemicals to be replaced or their hazard to be reduced by formulation changes. Changes in scheduling have in some cases been made to ensure that full advantage is taken of such technological advances.

Therapeutic Goods and Cosmetics Bill

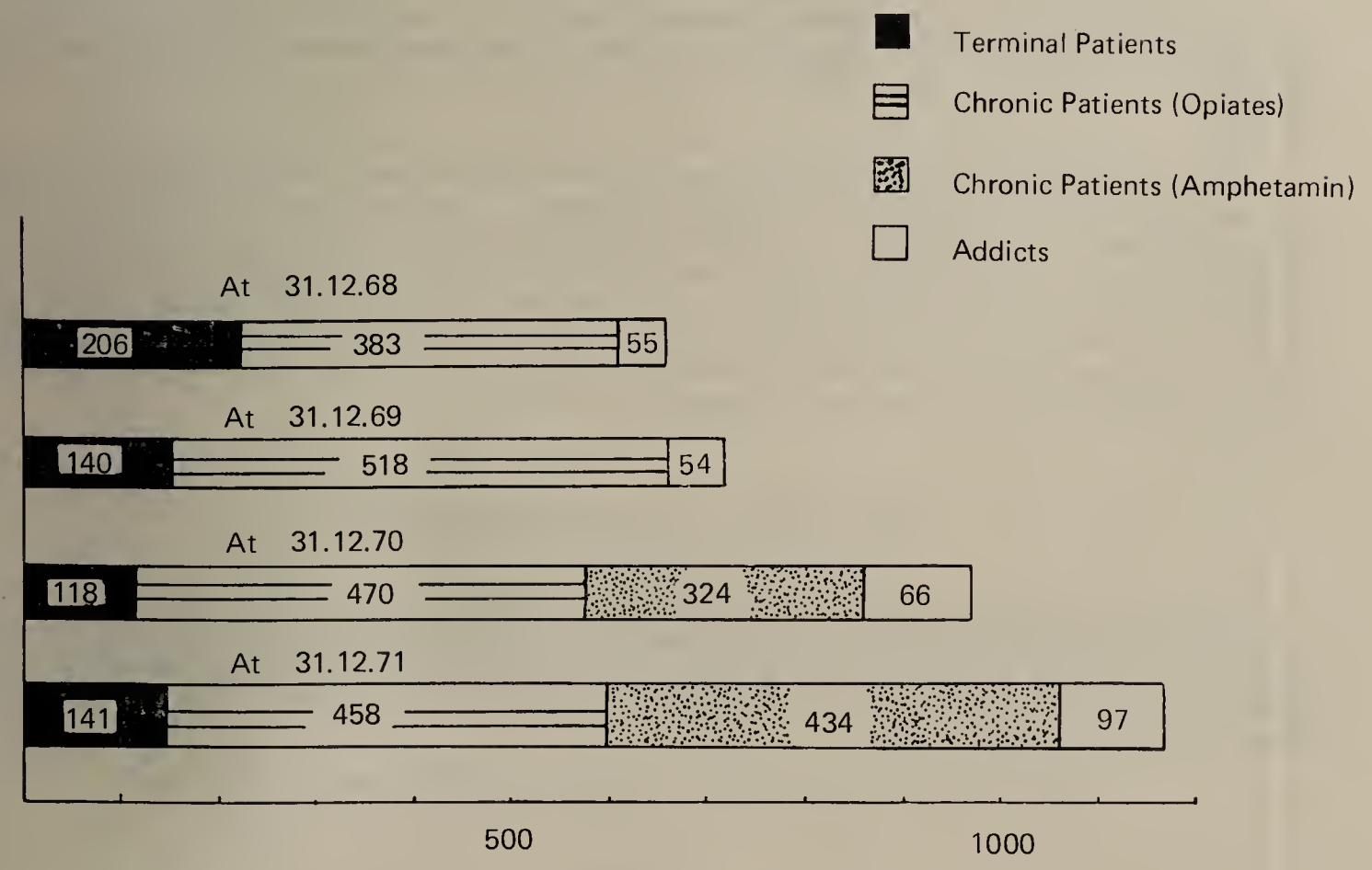
In November, 1971, a Therapeutic Goods and Cosmetics Bill was introduced into Parliament by the Minister for Health. When enacted, the bill will be administered by the Poisons Branch. However, much activity has already occurred in anticipation of the enactment of this legislation. The bill requires manufacturers and wholesale distributors of therapeutic substances to be licensed,

TABLE 1.



Number of addicts known as a result of applications made under section 28 of the Poisons Act, 1966.

TABLE 2.



Numbering current authorities issued under section 28 of the Poisons Act, 1966.

NOTE: Authorities for patients with chronic conditions and addicts are followed up and regularly reviewed. Authorities for patients with terminal diseases are not followed up, and for the purpose of this table are considered current only for the year in which they are issued.

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and it has been foreshadowed that the issue of a licence to manufacture therapeutic substances will depend upon compliance by the applicant with a "Code of Good Manufacturing Practice for Therapeutic Goods". The code has been developed by officers of the Commonwealth Department of Health, in consultation with representatives of State Health Departments and the pharmaceutical industry. Officers of the Poisons Branch assisted in the development of the code. Most known pharmaceutical manufacturers have been inspected by Poisons Branch staff, with the co-operation and assistance of plant inspectors provided by the National Biological Standards Laboratory. Although a number of plants will require further inspection, much of the preliminary inspection work necessary for the consideration of licence applications has now been completed.

Criteria for the issue of licences to sell therapeutic substances by wholesale have yet to be developed, and little attention has so far been paid to the standard of facilities and records provided by firms at present engaged in wholesale distribution of pharmaceuticals. It is expected that this aspect will be given greater attention during 1972.

The adoption of uniform standards throughout Australia for therapeutic goods is of prime importance. Poisons Branch staff have represented the Department at meetings of Commonwealth and State Health Department officers to discuss uniform standards and the development of a uniform approach to the control of therapeutic goods. A range of general standards for therapeutic goods is being prepared by officers of the Commonwealth Health Department, and provision has been made for the incorporation of these general standards in Therapeutic Goods and Cosmetics Regulations. In fact, uniformity with the Commonwealth and other States has been a keynote of many of the developments involving drugs and poisons during the year under review.

Another co-operative activity that will be reflected in Therapeutic Goods and Cosmetics Regulations has been the development of a *Guide to Advertising of Proprietary Medicines.* The guide was developed by a National Health and Medical Research Council subcommittee, of which an officer of the Poisons Branch was a member. The guide has already been adopted in respect of radio and TV advertising by the Commonwealth Department of Health and in respect of advertising in daily newspapers and a number of magazines by the Media Council of Australia. Its incorporation in Therapeutic Goods and Cosmetics Regulations will extend the provisions of the guide to other forms of advertising, and ensure that promotion of medicines to the public is factual and follows sound medical principles.

Assistance to Manufacturers, Distributors and Prescribers

The Poisons Branch has continued to assist persons involved in the manufacture, distribution, prescribing and use of drugs and poisons wherever possible. A number of explanatory leaflets has been written and reproduced on such matters as poison containers, labelling and packaging of drugs and poisons, prescription requirements and requirements for domestic, industrial and agricultural poisons.

Many inquiries have been received during the year from persons seeking assistance in complying with the requirements of legislation on drugs and poisons. These have taken a significant amount of time, sometimes to the detriment of routine inspection work. However, manufacturers and distributors have been encouraged to seek assistance from Branch staff on such matters as container and label design and distribution policies as it is felt that this type of activity can often prevent violations at a later stage, and correction can be achieved more economically and quickly before a product is marketed than is possible afterwards. It is believed that this approach also develops a greater sense of co-operation between government and industry.

POLICE MEDICAL BRANCH

Since the foundation of the newly reconstituted Police Force in 1862 a medical officer has always been associated with the Police Department. Known for over 100 years as the Police Surgeon, the title was changed in 1964 to that of Police Medical Officer. At the present time two medical officers work full-time with the Police Department, and they are responsible directly to the Director General of Public Health.

Location: C.I.B. Administrative Building, Campbell Street, Surry Hills

STAFF

Senior Police Medical Officer: Dr E. B. Pedersen, M.B., B.S., D.T.M. & H.
Assistant Police Medical Officer: Dr A. A. J. de C. Vane, M.B., B.S.

ORDERLIES

An orderly is provided by the Police Department to assist with records, correspondence and appointments for examination and consultation. A shorthand-typist is fully employed and works under the direction of the medical orderly.

FUNCTION OF THE POLICE MEDICAL SERVICE

To provide a comprehensive medical service within the Police Force.

DUTIES OF THE POLICE MEDICAL OFFICERS

Advise the Commissioner of Police on medical matters relating to the New South Wales Police Force.

Examine all police recruits to determine their fitness for police service.

Two thousand three hundred and twelve applicants were examined during 1971.

One thousand one hundred and fifty-two were passed as physically fit.

One thousand one hundred and sixty were rejected for the reasons listed below.

Item		*Number of applicants suffering from defect*
Obesity		308
Defects of physique—		
Underweight or under chest or muscularly frail		279
(a) Defective vision and diseases of the eyes	171	
(b) Colour blindness	61	
		232
Dental caries		139
Skeletal defects—		
(a) The spine	53	
(b) Upper and lower limbs	102	
		155
Defects of ear, nose and throat—		
(a) Defective hearing	35	
(b) Other defects	30	
		65
Cardio-Vascular system—		
(a) Congenital heart disease, coronary insufficiency, postrheumatic conditions	30	
(b) Hypertension	98	
		128
Chronic lunge diseases (excluding tuberculosis or asthma)		11
Emotional and psychiatric disorders		37
Asthma		28
Peptic ulcer		5
Allergies		3
Skin diseases		26
Diseases of renal tract including haematuria		17
Hernia		19
Haemorrhoids		18
Pilo-nidal sinus		38
Severe varicocele		7
Severe hydrocele		1
Varicose veins		19
Mal-descended testis		7
Tumours of the testis		3
Osteogenic sarcoma (tibia.)		1
Diseases of spleen and lymph glands		3
Diseases of thyroid gland		4
Glycosuria prior to investigation for diabetes mellitus		11
Diseases of the breast		2
Metropathia haemorrhagica		1

Examine all cadets at 6-monthly intervals and report their state of fitness. Four hundred and twenty examinations were carried out during 1971.

Examine all probationary constables prior to confirmation of appointment. Four hundred and twenty-one confirmed during 1971.

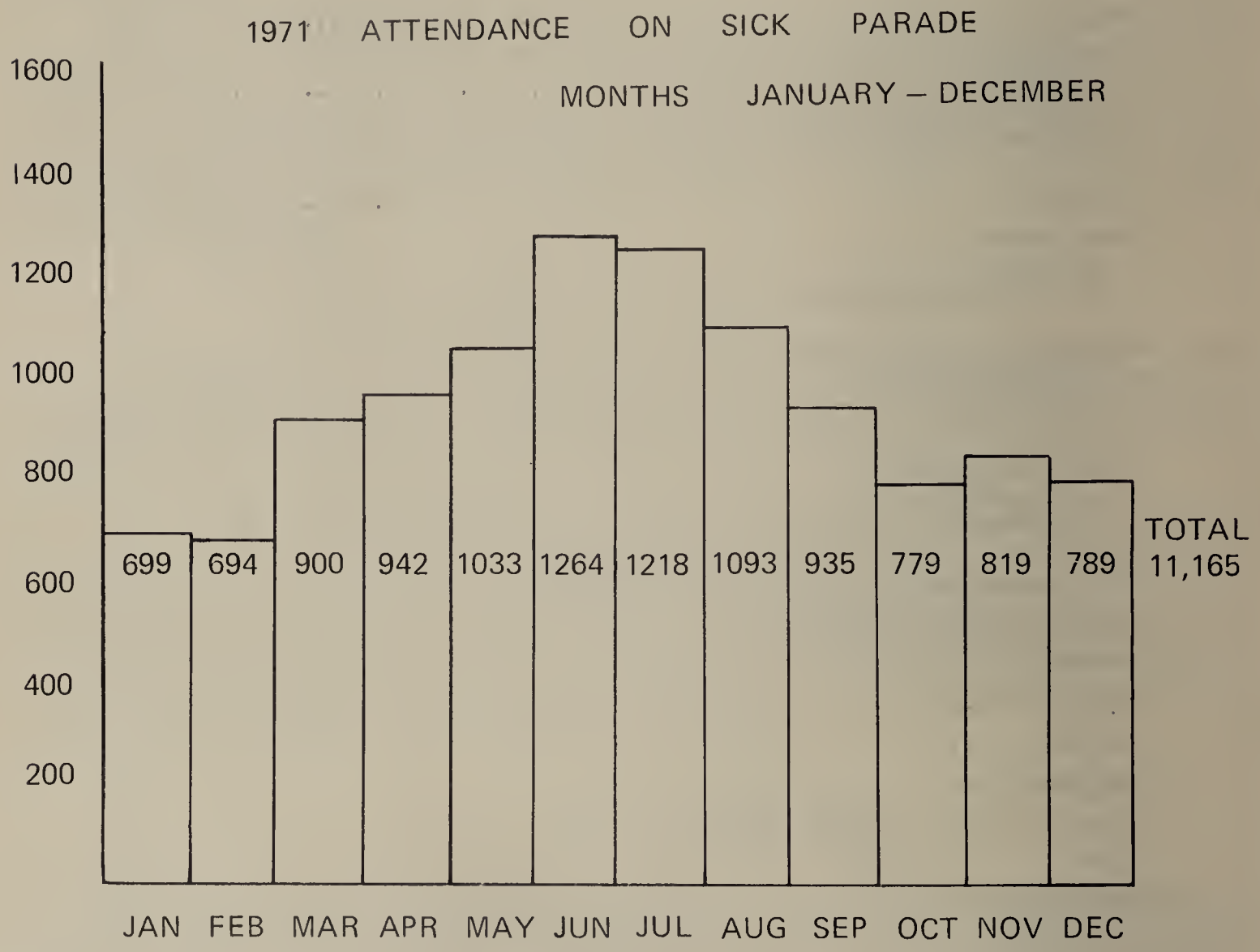
Vaccinate all probationary constables on completion of their initial training. Six hundred and fifteen vaccinations carried out during 1971.

Annual examination of twenty-four shallow water divers. Fifteen applicants for shallow water diving were also examined during 1971. Besides a normal physical examination, special attention is paid to the applicants' vital capacity and respiratory function, as well as their ears and sinuses. Spirometry tests are carried out in all cases.

Annual examination of the fifty members of the Emergency Squad. These men have to maintain a level of fitness above that of the average rank-and-file policeman. Electrocardiograms are performed on all members of this squad.

Examine all sergeants first class prior to their appointment to commissioned rank, and thereafter before each promotion to higher rank. Eighty-three such examinations were carried out during 1971.

Daily sick parade. Attendance varies from 40 to 130. Attendance is greater during the months May–August.



Assess disabilities of all police in relation to injuries received whilst on duty. Hundreds of injuries, both major and minor, are received annually by police whilst carrying out their normal duties.

Certify and recommend for payment all expenses incurred for injuries received on duty.

Approximately 10 hours per week are spent carrying out duties as outlined in the last two paragraphs.

Examine at regular intervals all police performing light duties. The purpose of this examination is to ascertain—

(a) whether such personnel are fit to return to full duties;

(b) whether they are able to continue a useful function in a light duty capacity.

Carry out medico-legal examinations. These are mostly in connection with charges for carnal knowledge, but also include abortion, assault and murder cases.

During 1971, 199 examinations were carried out for these offences:

Carnal knowledge	168
Abortion	28
Rape	3

Attend court to give evidence in relation to the medico-legal cases examined. During 1971, court appearances totalled thirty-three:

Abortion	19
Rape	4
Carnal knowledge	10

Lectures on health and physical fitness to the following groups:

Probationary constables.
Cadets.
Sergeants.
Detectives.
Officers.
Officers attending the Commonwealth Training Centre at Manly.
Police at selected country centres.

A total of thirty lectures was given to the above groups during the year 1971.

Counselling of police personnel in cases of anxiety and stress syndromes. There has been a noticeable increase in the number of police suffering anxiety and depressive states. It has been found useful to spend time with these men in a counselling capacity. This is often done in conjunction with their own doctors and consulting psychiatrists.

Consultation on medical matters with members of the Scientific Bureau, Drug Squad and Breathalyzer Section.

Country Recruiting. During 1971, 42 days were spent with the recruiting team in country areas.

Arrange medical boards for personnel physically unfit to perform police duties. Nineteen members of the service were retired medically unfit during the year 1971.

Assist in planning and implementing programmes relating to disaster control. This involves conferences with representatives of the Hospital's Commission and services such as the fire brigade, ambulance and armed forces. It also involves helping to plan and carry out simulated disasters.

FUTURE PLANS

It is anticipated that larger premises will become available to the Police Medical Branch in the near future and that the medico-legal side of the work will expand.

BUREAU OF MATERNAL AND CHILD HEALTH

Director: A. Douglas, F.A.C.M.A., LL.B., M.B., Ch.B., D.P.H., D.T.M. & H.

Location: 9–13 Young Street, Sydney

STAFF

1 Nursing Supervisor.
1 Sister-in-Charge in-service training
1 Administrative Officer
1 Health Education Officer—Maternal and child health, as from April, 1971.
1 Health Education Officer—Aboriginal health, as from November, 1971.
1 Liaison Officer—Aboriginal health, as from October, 1971.

Further integration of the Bureau has occurred during 1971 at basic field services level, at child health centre level and at health district level and in Central Administration of the Bureau. Visits have been paid by the Director and senior officers to the health districts and to child health centres and conferences have been run for specific disciplines, as well as across the various disciplines in the Bureau with both clinical and administrative content.

ADMINISTRATION

Medical officers of health and senior medical officers of child health centres have been asked to examine the possibility of decentralizing the child health centres to the periphery of their health district or child health centre area, to bring the two traditional arms of the Bureau closer together at the point of delivery, to the family and the community.

CHILD HEALTH CENTRES

The Queenscliff Child Health Centre, which contains the Child Health Centre for Manly-Warringah, and the Diagnostic Unit for Country Children was opened in November, 1971, and it will be functioning on a limited basis early in 1972.

Blacktown Child Health Centre commenced building late in 1970 within the grounds of the Blacktown Hospital. This health centre contains a child health centre and a mental health unit and a day hospital for psychiatric patients and is the first such project to be completed within the grounds of a public hospital.

ABORIGINAL HEALTH

Under the Commonwealth scheme for financing programmes for Aboriginal Health, one position of health education officer for Aboriginal Health and one position of liaison officer for Aboriginal Health have been established as part of the Bureau, particularly to support the community nursing programme for Aboriginal Health established at Bourke, Moree, Wentworth, Dareton, Wilcannia, Narooma and Nowra with two positions in the Sydney metropolitan area. All positions except Nowra and one of the metropolitan positions are now filled.

The programme for the training of Aboriginal girls as nurse aids is progressing and so far seven nurse aids have completed the training, twelve are in training and two have failed to complete their training.

IN-SERVICE TRAINING COURSE IN COMMUNITY NURSING

Three programmes for in-service training in community nursing were conducted in 1971.

The two full-time programmes comprised nurses from:

Agency	Pre 1971	1971	Total
Maternal and Infant Care	106	10	116
Child Health	100	3	103
Geriatics	3	..	3
Psychiatric Services	34	9	43
Mentally Handicapped	4	3	7
Sydney Home Nursing Service	19	4	23
Commonwealth Health Department	1	..	1
Division of Tuberculosis	8	1	9
Epidemiology Section	2	..	2
Anti-Tuberculosis Association	4	..	4
Private Hospitals	2	..	2
Community Health Nurse (Bureau of Maternal and Child Health)	1	1	2
Hospitals Commission	..	2	2
Commonwealth Centre, Marrickville (Aboriginal)	..	1	1
Total	284	34	318
The Refresher Programme comprised nurses from:			
Bureau of Maternal and Child Health	1	..	1
Metropolitan Baby Health Centre Sisters	4	2	6
Metropolitan Child Health Centre Sisters	10	14	24
Anti-Tuberculosis	..	2	2
Total	15	18	33

Adjustments were made in the long course based on the evaluation by the course lecturers and students.

Nurses attending the refresher programme of 4 weeks continue to express the view that refresher courses were essential to nurses who had undertaken post-basic training many years ago.

HEALTH EDUCATION

Towards the end of the year a health education officer, previously employed in the Drug Programme run by the Division of Health Education of this Department, was transferred by arrangement, as health education officer for Aboriginal Health. This officer is a trained anthropologist and has been extensively involved in community development in North America.

Position of Health Education Officer, Maternal and Child Health, was created and filled during the year by an experienced child health sister who had a special interest in the health of migrants, particularly mothers and children.

The addition of these two officers to the staff of the Bureau should provide a much needed stimulus to all health education programmes in the Bureau.

SECTION OF SPECIAL SERVICES

Assistant Director: W. Hemphill, M.B., B.S., D.C.H.

Location: 9–13 Young Street, Sydney

STAFF

2 Physician Specialists
1 Senior Medical Officer
1 Medical Officer
1 Principal Clinical Psychologist
1 Senior Social Worker
1 Senior Speech Therapist
1 Clinical Psychologist
3 Social Workers

During 1971 the diagnostic clinic for atypical children from country areas and those not as yet catered for by child health centres in the Sydney area was continued at head office. The case-load included children with behaviour problems, various degrees of mental retardation, significant vision or hearing defects, and speech and other language defects. Staff from the section continued to conduct peripheral clinics at Mt Druitt, Lalor Park, Blacktown, Manly and Brookvale.

Medical officers attended sessions in baby health centres and conducted well baby clinics. These sessions are conducted as referral clinics to which infants and children may be referred for problems in feeding, sleeping, behaviour and other problems in development. Referrals are made by general practitioners and by public health nurses.

A visit was made to Albury by a paediatrician, a clinical psychologist and a social worker to offer consultative service to medical practitioners, parents, and Department of Education officers. Cases referred included failure to progress in education, behaviour disorders, disorders of speech, and intellectual handicap. Thirty-two new patients were seen by members of the team individually, or in combination, and appropriate recommendations were made to the referring person or agency regarding management of the presenting problem.

IN-SERVICE TRAINING OF MEDICAL OFFICERS

In February, 1971, a 4-day course of in-service training was conducted at the Evans Jones Theatre, Broughton Hall. It was decided to make the course a multidisciplinary venture and, apart from all Bureau medical officers, public health nurses, speech therapists, social workers, and psychologists attended. The opportunity for group discussions and the consequent communication appeared to be welcome and beneficial and it is planned to continue the multidisciplinary system for future conferences. Subjects discussed were "Techniques of Interviewing", "Techniques of Counselling", "The Deprived Child", "The Visually Handicapped Child", and the "Brain Damaged Child".

HEIGHT, WEIGHT, NUTRITION SURVEYS

During 1971, the study of school children of New South Wales which had commenced in 1970 was continued. The study was initiated as part of the International Biological Programme and is designed to give standards of height, weight and menarche of the schoolchild population. Measurements of height, weight, skin-fold thickness and bisacromial diameter were made on 25,000 children attending State and private schools. The measurements were made at the school or kindergarten. Processing of the data should be completed in 1972 and the results published in appropriate journals and booklets.

Also during 1971 a survey of height (or body length), weight, head circumference, skin-fold thickness, and bisacromial diameter of 14,000 infants and children, aged from 1 month to 5 years was commenced. The subjects are seen in baby health centres and pre-school kindergartens and the measurements are being taken by two public health nurses and recorded by a clerical assistant. Finance for the project is supplied by the National Health and Medical Research Council.

SECTION OF SPECIAL SERVICES STATISTICS, 1971

	Clinics at Head Office	*Clinics other than Head Office*
Behaviour problems—New cases	13	90
Behaviour problems—Reviews	1	47
Speech problems—New cases	70	116
Speech problems—Reviews	5	36
Total	89	289
Grand Total		378

At the end of 1971 there were seventeen well baby clinics.

Number of sessions	470
New cases	1,288
Review cases	1,045
Total	2,333

Referred for further investigation or treatment—307 cases.

SECTION OF MATERNAL AND INFANT CARE

Assistant Director: MARGARET M. SCOTT, M.B., B.S., D.P.H.

Location: 9–13 Young Street, Sydney

STAFF

1 Senior Medical Officer
3 Field Medical Officers
1 Nurse Inspector
1 Deputy Nurse Inspector
7 Assistant Nurse Inspectors
272 Baby Health Centre Sisters

POLICY AND PROGRESS

During 1971 the Section of Maternal and Infant Care continued to maintain and promote preventive health services to mothers, infants, toddlers and preschool children; and to encourage the use of baby health centre premises with the objective of maintaining the total health of the family and the community at the highest possible level.

The policy of decentralizing services to child health centres has continued but to date it has not been possible to completely decentralize medical staff to conduct the prenatal clinics and preparation for parenthood classes in the Western Metropolitan Health District. However, it is anticipated that this will be possible when the Blacktown Child Health Centre commences operation in 1972.

Seventeen prenatal clinics were operating by the end of the year and of these two were located in the Newcastle Health District. The attendances at the clinics increased from 9,900 to 12,105. The demand for preparation for parenthood classes continued to increase. The number of combined evening sessions for parents conducted throughout the year increased from 27 to 46 and the attendances increased from 1,098 to 2,166.

The number of well baby clinics conducted in baby health centres in the metropolitan area remained at 38. During 1971, a total of 7,297 children were assessed at these clinics and 1,150 were referred for further investigation or treatment. The number of day nurseries, child-minding centres and preschool kindergartens supervised by the section in 1971 increased from 44 to 53. A total of 2,750 children were fully examined or reviewed and 632 children were referred for further investigation or treatment.

The training programme for baby health centre sisters in the technique of routine hearing-screening tests for the detection of deafness in 8-month-old babies continued throughout 1971. One hundred and seventy-three baby health centre sisters have completed the irtraining and 6,514 hearing-screening tests have been carried out in the metropolitan baby health centres.

The use of baby health centre premises for the establishment of selected community services increased throughout 1971. The Association for Mental Health established adolescent information and advisory services at the baby health centres at Bankstown, Chester Hill, Revesby, Manly and Mona Vale; the Spastic Centre of New South Wales established physiotherapy clinics for cerebral palsied children at Macquarie Fields, Mortdale, Riverstone and Belmore Baby Health Centres; community aid services were established at Mortdale and Carlingford Baby Health Centres; a day centre for elderly persons was established at Homebush Baby Health Centre; social workers from the Section of Special Services operate from the baby health centres at Miranda, Gymea, Marayong and Doonside and Waverley Council conducts a regular immunization clinic at the Waverley Baby Health Centre.

In addition, accommodation has been made available at the baby health centres at Hornsby, North Epping, Pennant Hills, West Pennant Hills and Strathfield for the child health centre staff to carry out counselling, and the Family Planning Association of Australia is conducting a Family Planning Clinic one evening each week at the Dee Why Baby Health Centre.

The Section of Maternal and Infant Care has received the utmost co-operation from the local government authorities, community organizations and other sections and divisions of the Department of Health in the establishment of these services and there has been no interference in any way with the conduct of the baby health centre service.

BABY HEALTH CENTRES

At the end of 1971, there were 440 baby health centres operating in New South Wales, consisting of 161 in the metropolitan area and 279 in the remainder of the State.

During the year one additional new centre was established, one centre was reopened, two were transferred to new premises, four were closed and two services were temporarily suspended.

Additional centre in new premises: Emmaville.

Centre reopened: Greenethorpe.

Replacement centres transferred to new premises: Waverley and Kings Cross (Woolloomooloo).

Closures: Berrima, Morpeth, Rose Bay East and Dundas Migrant Hostel.

Temporary closure pending construction of new premises: Leichhardt (service transferred to Annandale).

Temporary closure pending repairs or acquisition of new premises: Chatswood (service transferred to Willoughby and McMahon's Point).

In addition staff was provided for a new service at Wilcannia. The accommodation and equipment is provided by the Wilcannia District Hospital and the service operates 1 day per fortnight. Transport of the baby health centre sister to Wilcannia is provided by the Royal Flying Doctor Service, New South Wales Division.

Negotiations were also entered into during 1971, and tenders let or work commenced for new baby health centres at Redfern, Carlingford and Glen Innes. Action was also initiated with the Hurstville Council for the replacement of the departmental centre at Hurstville and with the State Housing Commission for premises to establish a service at Emmerton.

BABY HEALTH CENTRES—NEW SOUTH WALES

The number of births in New South Wales for the year 1971 totalled 98,466—an increase of 10,018 over the previous year.

At the centres 85,185 individual infants under the age of 1 year were seen; the individual attendances were 183,244 and the total attendances were 1,215,612.

The baby health centre sisters carried out a total of 52,570 home visits during the year and 63,783 mothers were visited in hospital.

BABY HEALTH CENTRES—METROPOLITAN AREA

The number of births in the metropolitan area during 1971 totalled 60,395. Individual infants under the age of 1 year attending the 161 baby health centres in the metropolitan area totalled 53,313. The individual attendances were 114,953 and total attendances 739,355. Nineteen thousand eight hundred and twelve (19,812) home visits were carried out by the sisters working at the centres and 39,199 mothers were visited in hospital.

Further details of attendances at baby health centres throughout New South Wales are given in table I.

PRENATAL CLINICS—NEW SOUTH WALES

At the beginning of the year sixteen prenatal clinics were operating in New South Wales. Six of these were consultant clinics, and of these three were located in the Western Metropolitan Health District and three in the Newcastle Health District.

During 1971, 803 sessions were conducted at these clinics and the attendances totalled 12,105.

PRENATAL CLINICS—METROPOLITAN AREA

The ten prenatal clinics conducted by departmental officers continued to function during 1971 and provided a valuable and essential service to public patients living in the metropolitan area. The clinics which are free, operated on a weekly basis at the following baby health centres:

Parramatta (2); Liverpool (2); Green Valley, Manly, Dee Why, Blacktown, Mt Druitt and Villawood Migrant Hostel.

The staffing of the metropolitan prenatal clinics was arranged as follows:

Section of Maternal and Infant Care	*Section of Child Health*
Parramatta (2)	Manly
Liverpool (2)	Blacktown
Green Valley	Mt Druitt
Dee Why	
Villawood Migrant Hostel	

Seven hundred and three sessions were conducted during 1971 and the attendances totalled nine thousand and ninety-eight.

At the end of the year, five consultant clinics were operating in the metropolitan area and these were staffed by consultant obstetricians from three of the major obstetric teaching hospitals. During the year two new consultant clinics were established and staffed by obstetricians from St Margaret's Hospital, Darlinghurst. The first of these commenced in May, 1971, at Cabramatta Baby Health Centre and the second was started at Revesby Baby Health Centre in November, 1971.

One hundred and eighty-five sessions were conducted at the consultant clinic and the attendances during 1971 totalled two thousand four hundred and twenty-nine.

The staffing of the metropolitan consultant prenatal clinics was arranged as follows:

Prenatal Clinics	*Obstetric Hospital*
Parramatta	The Royal Hospital for Women, Paddington.
Liverpool	The Women's Hospital, Crown Street.
Blacktown	St Margaret's Hospital, Darlinghurst.
Cabramatta	St Margaret's Hospital, Darlinghurst.
Revesby	St Margaret's Hospital, Darlinghurst.

The services provided by the consultant clinics are considered to be of inestimable value to the expectant mothers living in the outer metropolitan districts as they provide for hospital booking, initial examination including blood tests and Papanicolaou smear to be carried out at the clinic thus eliminating the additional expense and arduosity of travelling to and from the hospital.

At the other clinics, the expectant mothers are required to attend the obstetric hospital for booking and initial examination before referral to a departmental clinic.

Departmental dietitians continued to be available for consultation at the Liverpool, Parramatta, Dee Why and Manly pre-natal clinics. A social worker from the Women's Hospital, Crown Street, continued to attend the pre-natal clinic at Liverpool. In addition, social workers from the Section of Special Services were available for consultation at Manly, Dee Why, Blacktown and Mt Druitt pre-natal clinics.

PRE-NATAL CLINICS—COUNTRY

The pre-natal clinics at Cardiff, and Charlestown in the Newcastle Health District continued to operate throughout the year and were staffed by specialist obstetricians from the Royal Newcastle Hospital.

In March, 1971, the pre-natal clinic at Belmont Baby Health Centre was closed and the patients were transferred to the new obstetric unit at Belmont Hospital.

During the year 100 sessions were conducted at the clinic in the Newcastle Health District and the attendances totalled 578.

Details of attendances at pre-natal clinics are shown on table II.

PREPARATION FOR PARENTHOOD CLASSES

In 1971, sixteen continuous classes of eight sessions per course were conducted at the following baby health centres in the metropolitan area:

Parramatta (2), Liverpool, Green Valley, Blacktown (2), Dee Why (2), French's Forest, Drummoyne, Randwick, Hurlstone Park, Revesby, South Hurstville, Jannali and Cronulla.

In addition two modified courses were conducted at the Training School for Girls, Parramatta. The staffing of the classes was arranged as follows:

Section of Maternal and Infant Care	*Section of Child Health*
Parramatta (2)	Dee Why
Liverpool	Randwick
Green Valley	Revesby
Dee Why	Jannali
French's Forest	Cronulla
Drummoyne	Blacktown (2)
Hurlstone Park	South Hurstville
Training School for Girls, Parramatta	

A total of 96 courses and 2 modified courses were completed throughout the year and 1,930 expectant mothers attended.

The number of combined evening sessions conducted for expectant parents was further increased to 46 this year. Total attendances at the sessions were 2,166.

Details of attendances at preparation for parenthood classes are given in table III.

WELL BABY CLINICS

During the year, thirty-eight well baby clinics continued to operate at selected baby health centres in the metropolitan area. The staffing of the clinics was provided by the medical officers of the Section of Maternal and Infant Care; the Section of Child Health; and the Section of Special Services.

During 1971, 1,404 clinic sessions were conducted by the medical officers of the 3 sections and the attendances totalled 7,297.

Details of staffing and attendances are given in table IV.

The clinics provide for the assessment of children up to the age of 5 years who are referred by the baby health centre sister or by other nursing or medical personnel either intra or extra departmental.

Guidance is offered to parents on the management of the presenting problem and no treatment is given beyond simple counselling. Children requiring further investigation or treatment are referred back to the family practitioner. Routine pre-school assessments are also carried out at the request of parents at clinics staffed by the Section of Maternal and Infant Care and the Section of Child Health.

HEALTH SERVICES TO DAY NURSERIES AND PRE-SCHOOL KINDERGARTENS

For many years a health service has been provided for children under school age who attend the day nurseries and pre-school kindergartens under the auspices of the Sydney Day Nursery and Nursery Schools Association, the Kindergarten Union of New South Wales Incorporated, the Commonwealth Migrant Hostels Ltd, and certain local government authorities.

The service provides for an initial assessment of each child enrolled at the centre, and where possible the parent is invited to be present at the examination. At the examination each parent is encouraged to discuss any problem that may be causing some concern. Adequate time to interview the parent is essential as it is the most valuable media for the promotion of positive and individual health teaching.

During the year, 244 visits were made to the 8 Day Nurseries and 42 pre-school kindergartens supervised by the section in the metropolitan area. In addition, 12 visits were made to 3 child minding centres conducted by the Commonwealth Hostels Ltd.

In 1971 a total of 2,750 pre-school children were fully examined or reviewed. Of these, 632 were referred for further investigation or treatment and the parents of 88 children were interviewed concerning the immunization status of their child. Further details are given in table V.

During the year hearing screen tests for the detection of deafness continued to be carried out by the audiometric team as part of the service to the cot rooms of the Sydney day nurseries.

The service is also available to pre-school children who attend kindergartens conducted by the Sydney Day Nursery and Nursery Schools Association, the Kindergarten Union of New South Wales and the Commonwealth Hostels Ltd.

The screening of pre-school children for the detection of deafness is carried out only at the request of a medical officer, general practitioner or pre-school director. Details of results of screening programme are given in table VI.

PRE-SCHOOL TEACHER TRAINING COLLEGES

The close liaison between the Section of Maternal and Infant Care and the pre-school teacher training colleges has continued and during 1971 a course of ten lectures on health were given to the teacher trainees at the Sydney Kindergarten Training College and ten lectures were given to the final year students at the Nursery School Training College. In addition, arrangements were made for seventy students at the Sydney Kindergarten Training College to pay an observation visit to a baby health centre.

SURVEY OF INBORN ERRORS OF METABOLISM

Urine Testing Survey—Turner Method

This survey implemented in 1964 has continued under the supervision of the Director, Oliver Latham Laboratory, North Ryde Psychiatric Centre. The test is carried out on all babies aged 6 weeks or over and the testing material is distributed free from all baby health centres throughout New South Wales; clinics conducted by the Karitane Mothercraft Society; the Australian Capital Territory Health Service Office; the Royal Far West Children's Health Scheme; the New South Wales Bush Nursing Association; the Royal Flying Doctor Service, New South Wales Division, and the Cot Rooms of the Sydney Day Nurseries.

A special home visit is made by the baby health centre sister to the parents of babies aged 6 weeks who are not attending a centre. The purpose of this visit is to distribute the urine testing material and to emphasize the importance of having this test carried out. In addition, the sisters at the baby health centres contact parents when a retest is requested by the laboratory.

One thousand five hundred and fourteen retests were requested during 1971.

Suspected or positive cases of phenylketonuria are notified direct from the laboratory to the nominated family practitioner and arrangements are made for the baby to be admitted to the special unit at the Institute of Child Health, University of Sydney or the Paediatric Unit, the University of New South Wales.

Guthrie Test

This study, commenced in the latter part of 1966 continued and at 31st December, 1971, had been introduced at twenty-five hospitals in the metropolitan area and eighty-six hospitals in the country.

Details of results of "Survey on Inborn Errors of Metabolism" are given in table VII.

Other Inborn Errors of Metabolism

The follow-up of other "Inborn Errors of Metabolism" by the baby health centre sisters has continued. The special study on cystine lysinuria continued during 1971 and the baby health centre sisters made 241 special home visits to assist the Oliver Latham Laboratory with the following up of this survey.

PARENT DISCUSSION GROUPS

The New South Wales Association for Mental Health has continued to conduct parent discussion groups in baby health centres.

During the year sixteen discussion groups were held in the following baby health centres:

Hunters Hill, Elanora Heights, Yagoona, Punchbowl (2), West Pennant Hills, Forestville (4), Turramurra (2), Avalon, Baulkham Hills, Sutherland and North Ryde.

IMMUNIZATION

The baby health centre sisters continued to emphasize the importance of immunization to all mothers attending the baby health centres and reminder letters were distributed to all parents of 15- to 18-month-old babies emphasizing the importance of the booster dose.

As a result of the recommendations by the *ad hoc* committee on immunization supplies of Sabin vaccine are kept at the following baby health centres in the metropolitan area:

Hornsby, Dee Why, Green Valley, Liverpool, Blacktown, Mt Druitt, Paddington, Parramatta, Randwick and Sutherland.

The Sabin vaccine is available for distribution to the general practitioners in the area and the baby health centre sister dispenses the vaccine to families who have difficulty in obtaining it from their family practitioner or local council.

It is also planned to establish an immunization clinic at the Villawood Migrant Hostel as soon as a refrigerator is installed in the baby health centre. This immunization clinic will be conducted by a medical officer of the section and will provide for the immunization of migrant children with triple antigen and Sabin vaccine.

ROUTINE SCREENING TESTS FOR THE DETECTION OF HEARING DEFECTS IN 8-MONTH-OLD BABIES

This service was introduced in the latter part of 1970 and by 31st December, 1971, 183 baby health centre sisters in the metropolitan area had completed their training.

Since the introduction of the service, 6,514 babies have been screened by the baby health centre sisters and 185 babies were referred to the audiometric team for secondary screening.

BABY HEALTH CENTRE STAFFING

Full establishment was not reached at any stage during the year and employment vacancies ranged from 15 ½/5 units to 29 4½/5 units.

Services were maintained with difficulty, but short-term closures and the reduction of home visiting services frequently resulted.

During the latter part of the year the terms of permanent appointment for baby health centre sisters were reviewed and the 3-year period of directed country service as a requirement for permanency was abolished. This has resulted in an appreciable increase in the number of permanent officers.

However, difficulties are still being experienced with the recruitment of bond trainees, as young officers are not prepared to undertake the terms of employment at present required by the Department.

The problem of staffing country circuits has become less acute due to successful local recruitment by the health districts.

During 1971, thirteen country circuits were relieved from the metropolitan area as compared with twenty-five in 1970. Local relief staffing by the health districts greatly assisted the metropolitan area to maintain services. The number of available units of staff for relieving ranged from 4/5 to 1 4/5 during 1971. This was insufficient to cover the relieving requirements of recreation leave, emergency sick leave and to release an adequate number of nurses to attend the in-service training course in Community Nursing which is considered of vital importance for staff training and development. However, despite the staffing shortage, seven baby health centre sisters successfully completed the in-service training course in 1971 and two attended the refresher course.

The nurse inspector and the deputy nurse inspector continued to supervise metropolitan baby health centres during the year and 105 visits were made.

In addition, thirteen visits were made to centres for specific problems.

Details of baby health centre staffing is given in table VIII.

TRAINING AND OBSERVATION VISITS TO BABY HEALTH CENTRES

During 1971, the section continued to arrange training and observation programmes. Seven hundred and seven visits were arranged for the students of the following training authorities:

University of Sydney, fifth year medical students and social work students.

University of New South Wales, fourth year medical students.

General nursing students and midwifery nursing students.

Psychiatric trainees.

Post-graduate mothercraft students.

Post-graduate paediatric students.

Nursing Aid trainees.

Sydney Kindergarten Teacher's College students.

Students of the Department of Education College, University of Sydney.

Nurses undertaking the departmental in-service training course.

The baby health centre sisters contributed greatly to the success of the training and observation programmes by arranging 269 cases for interview and 73 special home visits.

PUBLICATIONS

The booklet *Healthy Motherhood* was revised during 1971 and a reprint of 200,000 copies ordered. *Our Babies* was also revised and a reprint of 200,000 copies ordered.

The printing of the departmental booklet *Keeping Your Child Healthy* is completed and distribution will commence in January, 1972.

Table 1—Attendances at Baby Health Centres, 1971

New South Wales

Year	Births	Individual Attendances	Total Attendances	Nurses	Number of Centres
1970	88,448	167,154	1,126,681	272	442
1971	98,466	183,244	1,215,612	272	440

Metropolitan Area

(including Western Metropolitan Health District)

Individual Attendances		Total Attendances	
1970	1971	1970	1971
104,397	114,953	695,837	739,355

Metropolitan Area

(excluding Western Metropolitan Health District)

Individual Attendances		Total Attendances	
1970	1971	1970	1971
74,677	80,494	497,379	528,515

Health District	Individual Attendances		Total Attendances	
	1970	1971	1970	1971
Western Metropolitan	29,720	34,459	198,458	210,840
Newcastle	16,821	18,492	117,207	130,375
South Coast	13,381	14,876	90,476	100,580
Western	9,355	10,190	64,142	72,146
North Coast	4,076	6,018	36,539	38,704
North Western	6,127	5,950	42,988	45,150
Riverina	10,834	11,243	67,103	74,669
Broken Hill	1,263	1,522	12,389	14,633

Table II—Attendances at Pre-natal Clinics, 1971

Pre-natal Clinic	Primiparae		Multiparae		Post-natal	Total Visits	No. of Sessions
	First	Subsequent	First	Subsequent			
Metropolitan Area—							
Dee Why	67	380	63	395	..	905	52
Manly	95	453	78	450	..	1,076	52
Villawood Migrant Hostel ..	96	283	85	309	6	779	52
Total	258	1,116	226	1,154	6	2,760	156
Western Metropolitan Health District—							
Parramatta (Monday) ..	47	254	57	414	..	772	52
Parramatta (Thurdsay).. ..	51	242	49	417	..	759	52
Liverpool (Tuesday)	60	451	111	1 088	..	1,710	52
Liverpool (Wednesday) ..	3	718	..	701	..	1,422	51
Green Valley	22	114	35	143	..	314	51
Blacktown	43	179	87	637	68	1,014	52
Mt Druitt	12	29	53	252	1	347	52
Total	238	1,987	392	3,652	69	6,338	362
Consultant Clinics (Western Metropolitan)—							
Parramatta	13	69	43	124	..	249	50
Liverpool	120	321	206	513	..	1,160	52
Blacktown	35	124	81	310	52	602	47
Cabramatta	34	110	46	197	27	414	34
Revesby	2	..	..	..	2	4	2
Total	204	624	376	1,144	81	2,429	185
Newcastle Health District—							
Belmont	2	11	2	11	4	30	6
Cardiff	2	26	19	135	7	189	47
Charlestown	11	49	32	254	13	359	47
Total	15	86	53	400	24	578	100
Grand Total	715	3,813	1,047	6,350	180	12,105	803

Table III—Attendances at Preparation for Parenthood Classes, 1971—Metropolitan Area

Metropolitan Area	Course						Total Attendances	Combined Parent Evenings						Total Attendances
	1	2	3	4	5	6		1	2	3	4	5	6	
Dee Why I	22	20	19	20	18	19	118	36	48	48	44	34	44	254
Dee Why II	22	21	22	20	14	23	122	..	..	..	..	..	..	..
French's Forest	21	23	17	19	17	26	123	22	50	58	56	38	44	268
Drummoyne	31	23	25	27	23	27	156	31	23	25	27	..	..	106
Randwick	10	8	9	10	9	12	58	..	..	..	..	..	..	..
Hurlstone Park	13	16	13	15	14	15	86	..	..	..	..	..	..	..
Revesby	14	11	14	13	14	16	82	..	..	..	..	..	..	..
South Hurstville	12	15	17	18	19	22	103	..	..	..	..	..	..	..
Jannali	17	13	16	15	15	17	93	..	..	..	..	..	..	..
Cronulla	19	15	17	15	14	15	95	52	52	32	22	42	60	260
	181	165	169	172	157	192	1,036	141	173	163	149	114	148	888
Western Metropolitan Health District														
Parramatta I	29	29	28	30	31	28	175	40	46	42	42	35	34	239
Parramatta II	25	37	33	25	32	29	181	36	36	32	41	27	53	225
Blacktown I	21	25	25	26	24	27	148	86	86	78	80	83	82	495
Blacktown II	22	26	27	26	22	24	147	..	..	..	..	..	..	..
Liverpool	18	23	26	25	25	22	139	31	26	68	67	68	59	319
Green Valley	21	9	18	8	13	13	82	..	..	..	..	..	..	..
Training School for Girls	..	12	..	10	..	..	22	..	..	..	..	..	..	..
Total	136	161	157	150	147	143	894	193	194	220	230	213	228	1,278
Grand Total	317	326	326	322	304	335	1,930	334	367	383	379	327	376	2,166

Table IV—Well Baby Clinic Statistics, 1971

Well Baby Clinic	No. of sessions	Attendances			Referred from—		Referred to—			
		New cases	Review cases	Total	Baby Health Centre	Other	Hospital	Child Health Centre	General practitioner	Other
Section of Maternal and Infant Care—										
Auburn	46	168	47	215	163	13	4	1	3	5
Dee Why	46	172	59	231	215	2	10	1	23	9
Dulwich Hill	40	124	38	162	121	..	10	2	9	1
Epping	40	160	56	216	159	5	..	5	16	7
French's Forest I	40	158	49	207	122	36	2	..	23	3
French's Forest II	24	64	33	97	46	17	1	..	9	3
Green Valley	48	184	25	209	151	..	11	7	2	2
Campsie (to end March, 1971)	12	40	16	56	49	..	11	5	3	1
Total	296	1,070	323	1,393	1,026	73	49	21	88	31
Section of Child Health—										
Avalon	42	150	87	237	234	3	2	2	21	5
Blacktown (to end March, 1971)	11	46	23	69	12	1	1	..	1	1
Bankstown	42	156	25	181	176	5	5	8	8	10
Cabramatta	47	187	65	252	166	26	2	19	10	9
Caringbah (to end May, 1971)	9	26	11	37	33	4	2	..	1	1
Gladesville	47	229	53	282	199	1	18	23	20	3
Granville	43	185	25	210	200	..	3	6	16	4
Hurstville South	48	186	48	234	208	..	3	5	11	23
Manly	12	47	43	90	58	..	2	..	6	1
Mt Druitt	9	52	48	100	37	11	4	1	6	15
Randwick	46	150	43	193	188	..	12	5	29	6
Revesby	48	254	16	270	246	1	4	4	6	13
Surry Hills	47	188	44	232	215	1	36	7	14	7
Sutherland	38	103	95	198	150	..	5	2	14	32
Turramurra	50	410	60	470	360	78	4	1	19	69
Yagoona	22	107	9	116	110	..	1	1	5	9
Narrabeen	29	99	81	180	154	21	8	..	4	10
Lane Cove	48	195	25	220	213	2	5	8	35	1
Total	638	2,770	801	3,571	2,959	154	117	92	226	219
Section of Special Services—										
Blacktown (from April, 1971)	36	96	99	195	44	2	1	3	6	4
Balmain	25	136	25	161	80	4	4	..	7	33
Chatswood (McMahon's Point)	29	44	79	123	33	11	5	3	5	4
Caringbah (from June, 1971)	33	114	33	147	106	19	1	..	8	6
Fairfield	25	29	66	95	29	..	3	1	3	4
Five Dock	12	26	15	41	31	8	..	1	1	25
Hornsby	47	82	138	220	183	3	..	3	14	3
Manly (from April, 1971)	35	170	94	264	186	2	8	8	11	15
Mt Druitt (from April, 1971)	37	107	83	190	96	14	7	2	8	3
Campsie (from April, 1971)	29	114	40	154	114	..	9	1	4	..
Kogarah	19	24	52	76	71	4	..	1	2	3
Liverpool	26	58	56	114	56	2	5	3	7	4
Newtown	19	58	26	84	79	..	11	2	2	..
Paddington	7	10	6	16	14	1	1	..	..	..
Parramatta	29	54	59	113	104	8	7	6	1	2
Petersham	13	30	46	76	70	..	6	1	..	..
Ryde	49	136	128	264	127	3	..	5	12	2
Total	470	1,288	1,045	2,333	1,423	81	68	40	91	108
Grand Total	1,404	5,128	2,169	7,297	5,408	308	234	153	405	358

TABLE V—MEDICAL EXAMINATIONS, 1971: DAY NURSERIES—PRE-SCHOOL KINDERGARTENS—CHILD MINDING CENTRES—MIGRANT HOSTELS

	Number of Schools	Number of visits	Full examinations	Review examinations	Parent Interviews	Referred for further investigation or treatment including immunization
Day Nurseries	8	65	352	155	31	152
Preschool Kindergartens ..	42	179	1,821	258	1,052	462
Child Minding Centres						
Migrant Hostels	3	12	153	11	20	18
Total..	53	256	2,326	424	1,103	632

TABLE VI—HEARING SCREENING TESTS, 1971: DAY NURSERIES—PRESCHOOL KINDERGARTENS—SPECIAL REFERRALS

	Number tested	Reviews	Referred for further investigation	Hearing aids or operation	Speech defects	Referred for speech therapy
Under the age of 1 year ..	348	3	13	2	..	..
Over the age of 1 year ..	66	8	30	4	6	3
Total..	414	11	43	6	6	3

TABLE VII—STATISTICS—SURVEY OF INBORN ERRORS OF METABOLISM

Urine Testing Survey—Turner Method

Total number of tests carried out from 1st January, 1971, to 31st December, 1971 = N.S.W. 78,400. A.C.T. 3,460. Total = 81,860.

Confirmed cases of phenylketonuria for 1971 = N.S.W. 3. A.C.T. Nil. Total = 3.

Incidence of phenylketonuria for 1971 = N.S.W. $\frac{1}{23,133}$ A.C.T. Nil. Overall incidence 1971 $\frac{1}{27,287}$

Total number of tests carried out since 1st March, 1964, to 31st December, 1971 = N.S.W. 504,313. A.C.T. 13,832. Total = 518,145.

Confirmed cases of phenylketonuria since 1964 = N.S.W. 27. A.C.T. 1. Total = 28.

Incidence of phenylketonuria since 1964 = N.S.W. $\frac{1}{18,678}$ A.C.T. $\frac{1}{13,832}$ Overall incidence since 1964 $\frac{1}{18,505}$

Guthrie Test for Raised Blood Phenylalanine

Total number of tests carried out from 1st January, 1971, to 31st December, 1971 = 67,689.

Number of positive cases detected in 1971 = 6.

Incidence = $\frac{1}{11,282}$

Total number of tests carried out since inception of survey = 145,253.

Number of positive cases detected since inception of survey = 14.

Incidence = $\frac{1}{10,375}$

Table VIII—Staffing Statistics, 1971

Staffing	
Establishment	272
Employment 31st December 1971	255 4½/5 units
Permanent Officers	128
Temporary Officers	94
Part-Time Officers	66 = 33 4½/5

Appointments	
Permanent (8 Bond Trainees)	26
Temporary	20
Part-Time	20 = $8\frac{4}{5}$
Increase units	$\frac{1}{5}$
Total	55 units

Resignations	
Permanent	19
Temporary	25
Part-Time	19 = $10\frac{1}{5}$
Decrease Units	$\frac{2}{5}$
Total	$54\frac{3}{5}$ units

Resignation of Permanent Officers	
Retirement at 55 years of age	2
Retirement at 60 years of age	3
Compulsory retirement 65 years of age	3
Retirement on medical grounds	1
Transfer to other departments	1
Other reasons	9
Total	19 units

Periods od Relief of Country Circuits

Health District	Number of Periods
Northwestern	2
North Coast	1
Newcastle	1
South Coast	1
Riverina	7
Western	..
Broken Hill	1
Total	13

Replacement of Staff Country Circuits

Health District	Local Recruitment	Directed from Metropolitan	Local Transfer
Northwestern	..	3	..
North Coast	1	..	..
Newcastle	1	2	..
South Coast	1	1	..
Riverina	1	1	..
Western	..	3	1
Broken Hill	..	..	..
Total	4	10	1

SECTION OF CHILD HEALTH

Assistant Director: J. R. F. Boger, M.R.C.S., L.R.C.P., D.C.H., Grad.Dip., Univ. N.S.W., F.A.C.M.A.

Location: 9–13 Young Street, Sydney

STAFF

10 Psychiatrists.
14 Senior Medical Officers.
48 Medical Officers.
12 Teachers' college Medical Officers.
4 Part-time Teachers' college Medical Officers
1 Part-time Ear, Nose and Throat Specialist.
3 Senior Clinical Psychologists.
22 Psychologists.
1 Part-time Psychologist.
21 Social Workers.
32 Speech Therapists.
3 Part-time Speech Therapists.
94 Nursing Sisters (excluding sister on establishment of Division of Tuberculosis who works half-time in child health at Broken Hill).
28 Clerical Officers.

POLICY AND PROGRESS

Progress has been maintained in integrating the service with the Section of Maternal and Infant Care as a step towards the fusion in the coming year of the two sections and the emergence of metropolitan and country sections in their place.

While co-ordination and integration for the total health supervision of the expectant mother and child from birth to school leaving age continues, additional services have been provided only at the expense of existing services except in the new health centre area of Queenscliff, the headquarters of which to serve Manly Municipality and Warringah Shire was opened in November, 1971. There were increases in staffing establishment to serve the area and a diagnostic unit for country children for which staff were also provided was placed within the same building. This unit will provide, as far as possible, the same diagnostic assessment and treatment facilities for country children able to come to Sydney as those available through child health centres to children living in the metropolitan area and at Newcastle.

Queenscliff Child Health Centre began to see patients in November, 1971, as part of a large complex including, in addition to the diagnostic unit for country children, a health education section, a small dental unit and facilities for the treatment of psychiatric patients provided by North Ryde Psychiatric Hospital. It is likely that Blacktown Health Centre, comprising child health and psychiatric facilities, both outpatient and day hospital, and within the grounds of Blacktown Hospital, will be completed in May, 1972. With its completion for the whole metropolitan area only the Sutherland, Camden and Campbelltown Shires will not be served by a child health centre.

After much deliberation, at the beginning of 1971, the metropolitan child health centre boundaries were revised to conform to local government boundaries, the first radical revision since 1958 when the first child health centre was established at Forest Lodge. Due regard had been paid to:

(1) Department of Education Area Directorates.

(2) The catchment areas of psychiatric hospitals.

(3) The plans for the establishment of metropolitan health districts, and Hospitals' Commission regions.

(4) Department of Child Welfare and Social Welfare regions.

Some child health areas were relatively unaltered while others were considerably changed.

In 1971 medical officers of the Section participated in eight on-going Preparation for Parenthood courses consisting of eight sessions each. These were held at Dee Why, Randwick, Revesby, Jannali, Cronulla, Blacktown (2) and South Hurstville. One hundred and fourty-four lectures were given. This compared with sixty-three lectures in 1970.

Three medical officers gave assistance to the Section of Maternal and Infant Care at three pre-natal clinics, where 2,437 examinations were done in 156 sessions. This compares with 4 pre-natal clinics in 1970; 2,506 examinations in 244 sessions.

Two well baby clinics having been transferred to the Section of Special Services, the number of such examinations decreased from 3,995 in 1970 to 3,571 in 1971.

In the metropolitan area at nursery schools and pre-school kindergartens the total number of children fully examined or reviewed was 6,963 in 1971 as compared with 7,837 in 1970.

There was a marked increase in the number of full and review medical examinations conducted at primary schools in the State, from 198,616 in 1970 to 224,056. The increase in the metropolitan area was from 109,128 in 1970 to 124,149 in 1971. There was a slight increase in the number of children examined in the remainder of the State from 92,269 in 1970 to 99,907 in 1971.

In the eight Sydney metropolitan child health centres (Queenscliff has not been included because its figures related to an incomplete year) the total number of schools within the boundaries of the centres compared to the total number of schools in which routine annual medical inspections were conducted over the last 4 years is listed as follows:

Period	Total Number of Schools Serviced by Centre	Total Number of Schools in which examinations were conducted	Percentage
1968	778	688	88
1969	781	664	85
1970	788	630	80
1971	786	546	69

The number of medical officer appointments at the child health centres in the metropolitan area has remained steady as compared with last year being 8,017, 7,887, 7,310 and 7,361 over the last 4 years—7,361 being the figure for 1971.

The attendance at metropolitan speech therapy clinics in 1971 was 19,764 as compared with 20,015 in 1970.

This year was the last one for the employment of ear, nose and throat specialists as sessional consultants. Of the six specialists employed at eight hearing units, all but one were over the age of 70 years. Attempts to recruit younger men on any basis, full, part-time or sessional had been fruitless. For some years some centres had been able to manage satisfactorily using the services of the senior medical officer or one of the medical officers to do this work. Not only has the expertise of the field staff, the medical officers and nursing sisters improved, but, over the past few years, the facilities of the Commonwealth Acoustic Laboratories to which many patients are referred have improved. Regional acoustic laboratories have been established at Newcastle and Parramatta.

Three thousand one hundred and fifty-three children were investigated at hearing units compared with 3,191 in 1970. The diminished number can again, as last year, be attributed to improved screening techniques in the schools.

The number of children attending child guidance clinics in the metropolitan area in 1971 totalled 5,631 as compared with 5,923 in 1970.

Diagnostic teams, consisting of a medical officer (usually the senior medical officer in charge of the child health centre), clinical psychologist, social worker and speech therapist (if a speech therapist is not working in the district) paid visits to 7 country centres this year. The teams were recruited from metropolitan child health centres and visited Dubbo, Grafton, Inverell, Lismore, Orange, Parkes and Wagga Wagga to assess atypical children. The administrative arrangements were made by the medical officer of health. Each team remained in the area for 1 week and 251 children were assessed, as compared with a total of 287 in 1970. Because of a shortage of Department of Education staff in the Griffith area a team from Cabramatta Child Health Centre did not visit the Riverina Health District this year.

Service to Child Welfare Department State wards in various establishments and private foster homes was maintained. The service is an important one because it is in line with the Bureau policy of determining the children in special need as early in life as possible and providing medical supervision and immunization services. However, much medical officer time is taken up, particularly at Forest Lodge, where it is calculated that 3 days per week of a medical officer's time is spent in this way, and, in addition, 1 day per week of a nursing sister's time.

At the Minda Remand Centre, the Metropolitan Boys Shelter and Yasmar Hostel, a total of 4,200 medical examinations were done this year as compared with 3,698 last year.

Screening of vision and hearing of children in Child Welfare Department homes and Aboriginal Welfare clinics was continued by 2 nursing sisters. The number of children tested rose from 3,909 in 1970 to 5,466 in 1971 and, in 2 years the number examined has doubled. Of 4,487 delinquents and wards seen, 572 had hearing defects and 255 vision defects. An additional commitment for these 2 sisters over the past 2 years has been the training of 183 baby health centre sisters and 2 Tresillian sisters in the auditory examination of the 8-month-old infant.

The waiting list at child health centres remains long particularly for child guidance and speech therapy clinics. The established positions have been fully staffed with the exception of:

(a) Speech therapy positions, particularly in country areas, which have been difficult to fill because of a shortage of therapists.

(b) While medical officer positions in the metropolitan area have usually been fully staffed, in the country there have been positions unoccupied for long periods because of a shortage of suitable applicants.

(c) Psychiatrist positions, which have been so poorly filled that it is easy to forget that, of ten positions, only three are occupied by full-time psychiatrists. The service otherwise is provided by private practitioners or Division of Establishments psychiatrists who work at child health centres on a sessional basis.

Medical Examinations of School Children

TABLE I

New South Wales	1969	1970	1971
School Population	965,553	981,625	993,587
Number of pupils fully examined ..	101,624	88,661	86,577

The school population does not include Australian Capital Territory and Norfolk Island.

The above figures do not include examinations in secondary schools.

TABLE II—Percentage of Defects of Notifiable Standard Found in Pupils Fully Examined in New South Wales Primary Schools

Defects	Boys	Girls
Vision (A)	5·22	5·10
Number with glasses	0·37	0·35
Squint	1·03	1·01
Hearing	2·93	2·44
Nose and Throat	2·38	2·01
Teeth	3·96	3·82
Skin	2·74	2·80
Thyroid	0·07	0·06
Heart and Circulation	0·76	0·74
Asthma	1·90	1·19
Other Lung Defects	2·02	1·54
Development (Hernia)	0·65	0·20
Orthopaedic	1·80	1·31
Nervous System	0·45	0·40
Psychological	1·42	0·80
Speech	1·71	0·71

(A) Includes with and without glasses.

OFFICE OF THE ASSISTANT DIRECTOR

In 1971, this office supervised work done in the Manly Municipality and Warringah Shire (until the establishment of the Queenscliff Health Centre in November), Sutherland Shire, two child guidance clinics and three medical clinics associated with the Children's Court on behalf of the Department of Child Welfare and Social Welfare at Minda Remand Centre, Metropolitan Boys Shelter and Yasmar (see below).

In all a total of 19,223 pupils attending primary and secondary schools were fully examined and reviewed. The medical officers carried out 1,548 parent interviews and the nurses made 2,608 follow-up interviews and 4,032 home visits and special interviews.

At the request of the Department of Child Welfare and Social Welfare and the Far West Childrens Health Scheme, and in conjunction with the Section of Special Services, special medical examinations were arranged. The two sections regularly visited homes and schools for atypical children and special schools not included in the metropolitan child health centre areas. These schools are controlled by the Department of Education, Department of Child Welfare and Social Welfare, Subnormal Children's Welfare Association and the Society for Crippled Children.

Preschool kindergartens were visited and well baby clinics were conducted by medical officers at Caringbah, Sutherland, Avalon, Narrabeen and Manly Baby Health Centres and relief given at others. A medical officer in the Sutherland Shire gave lectures in Preparation for Parenthood classes.

The hearing unit was no longer based on head office. Sutherland patients were seen at Bexley and Manly Municipality and Warringah Shire patients at Chatswood Child Health Centres.

The case load of the asthma clinic diminished further this year.

Special follow-up visits in Sutherland Shire and Manly-Warringah area were continued by nursing sisters specifically appointed to care for children with physical and emotional problems pending the establishment of child health centres.

The health of children attending National Fitness Camps at Myuna Bay, Point Wolstoncroft, Broken Bay and Narrabeen was supervised by nursing sisters from the Bureau. The duties include attendance on cases of illness or injury, instruction in first aid and other health topics and supervision of camp hygiene.

Nursing sisters assisted at the Immunization Centre on the basis of one day a week and at the annual Far West Summer Camp. Relief was provided to National Fitness Camps and to Government Insurance Offices.

Minda and Yasmar Child Guidance Clinics

These two clinics essentially exist to provide reports, the psychiatric component of "Physical and Mental Surveys" for the Children's Courts. The case load at Minda has been increasing year by year since the court and clinic were established in 1966. The work is professionally unsatisfying to most psychologists and social workers not only because the information available when the patients present is inadequate, but also because in many instances it is impossible to see the parents particularly for country cases, and there is little opportunity for therapy.

At the two clinics in 1971, 1,240 patients were seen, compared with 1,025 in 1970. There was a rise in the case load at Minda of 29 per cent.

Minda Medical Clinic

This clinic is established principally to examine girls remanded for physical examination on various charges, but particularly charged with "Exposure to Moral Danger". Boys, too, are examined and the medical officer works also at the Metropolitan Boys Shelter and at Yasmar (see below). The nursing sister who assists the medical officer is on the staff of the Department of Child Welfare.

During 1971, there was a rise of 15 per cent in the number of individual girls examined and 20 per cent in the number of boys examined over the 1970 figure.

A total of 1,244 examinations for girls and 1,255 for boys was carried out, of which 1,087 were first admission for girls and 1,189 for boys.

The ages of the admissions are shown in the table.

AGE DISTRIBUTION OF FIRST ADMISSION

Age (Years)	No. of Boys	No. of Girls
8	5	..
9	9	..
10	19	1
11	27	3
12	56	22
13	122	151
14	139	260
15	114	283
16	335	240
17	351	126
18	12	1
	1,189	1,087

Nine hundred and twenty girls were investigated for venereal disease with eighty-six confirmed cases of gonorrhoea and one of syphilis. There were seven cases of gonorrhoea and one of syphilis among the boys.

There were sixty-two pregnancies. Seven hundred and forty-six Papanicolaou smears were taken.

Large numbers of both girls and boys have physical defects which are often detected for the first time. The defects include those of vision and hearing, cardiac, such as rheumatic heart and congenital heart disease and conditions rare in the community but more common in children before the courts. Klinefelter's syndrome is a good example. In 1971, Professor S. Posen organized a seminar at Sydney Hospital. Almost all the cases presented had been referred by the medical officer at Minda, which is remarkable because the recognition of the condition is not always easy.

Metropolitan Boys Shelter and Yasmar

The total number of boys examined was 1,701—776 at the Metropolitan Boys Shelter and 925 at Yasmar.

Teachers' Training Colleges—Metropolitan Area

(Excluding Westmead situated in Western Metropolitan Health District)

The training colleges in the above area are Sydney, Alexander Mackie and William Balmain. William Balmain transferred to the new buildings at Lindfield during the year.

In September, 1971, all teachers' colleges became parts of the College of Advanced Education by Act of Parliament. Autonomy is not likely to occur for 5 years for most colleges. The terms of employment for medical officers will be altered with autonomy so their future role is uncertain. There is consequently insecurity, more pronounced at some colleges than at others.

At the three colleges there was a total student population of 5,227 of whom at Alexander Mackie, 198 were part-time; 21 (18 in 1970) separate health education courses were conducted; there were 2,991 student consultations for medical conditions; 972 student consultations for counselling, and 307 students were immunized, mainly against tetanus. Staff consultations for first-aid totalled 376.

Examinations for outgoing students for joining the teaching service and superannuation were done at the Medical Examination Centre. The arrangements were made through the medical officers at the colleges.

A new suite of offices was provided at Sydney Teachers' College in May, which proved a vast improvement and was much appreciated by the medical officers and no doubt, too, by the students.

Setting and correcting examination papers and assignments is a large part of the work. Over the past few years, it has increased owing to the new system of cumulative assessment of students' progress.

The medical officers have several additional commitments, for example:

(1) Preparation of general health curriculum for teachers' colleges.

(2) Lectures in first aid to trainee teachers at Sydney Technical College and health lectures to Department of Child Welfare officers.

(3) Working party producing health education resource material for teachers.

(4) Representation on Australian Broadcasting Commission Advisory Committee for School Broadcasts.

(5) Lectures to recreation officers and drug education officer trainees.

(6) Representation on Secondary Schools Committee in Health and Physical Education.

Bexley Child Health Centre

The weekly well baby clinic conducted at Hurstville Baby Health Centre was transferred to Hurstville South Baby Health Centre during the year. Two hundred and sixteen children were examined, of which 170 were new cases, and 25 defects were notified.

Of the 26 nursery schools and pre-school kindergartens, 18 were visited. Seven hundred and ten children were examined, of which 570 were new cases, and 26 defects were notified.

Owing to the change in boundaries for child health centres in the metropolitan area, the school population was increased by 10,211. Of 97 schools, 61 were fully examined, 16 were partially examined and 20 were not visited at all. Visits were made to 11 special schools in the area.

There were 505 medical officer appointments at the child health centre, of which 383 were new cases.

At the speech therapy clinic, there were 1,424 individual attendances. The reduction in numbers was due to staff changes and periodic shortages, including the temporary closure of one clinic. The speech therapist made 50 visits to the OL class at Hurstville Public School.

The hearing unit had 53 sessions, and including investigation of cases from head office (Sutherland) area, a total of 389 children were seen, which included 214 new cases.

The child guidance clinic had a total case load of 386, of which 248 were new cases. Weekly conferences, attended by the whole child health centre staff were held throughout the year, and monthly conferences with guidance officers and school counsellors in the Bexley and Sutherland areas were instituted.

A diagnostic team visited Wagga Wagga, and thirty-two children and parents were seen.

From January to May, routine medical examinations, and immunizations were carried out at Myee Hostel (C.W.D.) and for wards in foster homes in the area. Fifth year medical students visited the child health centre weekly during each term and post-graduate trainees in psychiatry attended regularly for case interviews and supervision by the psychiatrist.

Talks were given to mothers' clubs and Parents and Citizens' Associations.

The staff at the child health centre was short of one medical officer and staff was loaned to Head Office, and Minda and Yasmar during the year.

Chatswood Child Health Centre

Medical officers from the child health centre conducted pre-natal clinics and gave talks for the preparation for parenthood courses at the baby health centres, throughout the year.

Two weekly well baby clinics were conducted at Lane Cove and Turramurra Baby Health Centres; 663 children were examined, of which 579 were new cases and 161 defects were notified.

Due to reallocation of boundaries for the centre, there has been a reduction in the number of schools and pre-school centres in the area.

Twenty-eight pre-school kindergartens and nursery schools were visited and 1,172 children were examined. One hundred and twenty-eight parents were interviewed and forty defects were notified.

Of the 90 schools in the area, 80 were visited. There were 16,315 children examined, 467 parents were interviewed and 146 defects were notified. Nurses carried out 774 home visits.

Eleven special schools and units were visited, which is two less than in 1970.

The medical officer appointments at the child health centres were 1,274 of which 471 were new cases.

The 3 speech therapy clinics had a total of 2,620 attendances, and, in addition 15 stuttering children attended a course of 8 hours a day for 12 days.

The hearing unit had 47 sessions, and 317 cases were investigated, which included 149 new cases.

The child guidance clinic had a total case load of 621, which included 228 new cases. During the year, night group programmes were introduced in order to involve working parents who could not otherwise attend. The child guidance clinic staff received training in dermatoglyphics and finger printing from Dr Brian Turner during the year.

A diagnostic team of senior medical officer, psychologist and social worker visited Grafton for 1 week to assess atypical children.

Students attended both speech therapy and child guidance clinics for training during the year.

The staff was at full strength during 1971, and all were able to return to work at the centre in April, although the repairs to the building were not completed for several months after this, and working conditions were often difficult.

Two medical officers had leave to attend a paediatric conference overseas, and one medical officer was absent for 2 months on sick leave.

As in previous years, talks were given to mothers' clubs, parent and citizens' associations and other bodies.

Eastern Suburbs Child Health Centre

Owing to the change in boundaries for the child health centre area in 1971, 28 schools, with a population of 6,440 children were transferred from the Forest Lodge to the Eastern Suburbs Child Health area, although the staff at the child health centre was not increased.

One medical officer took part in the preparation for parenthood classes conducted at a baby health centre in the area during 1971.

Medical officers conducted 2 well baby clinics at Randwick and Surry Hills; 407 cases were examined, of which 316 were new cases; 152 defects were notified. Visits were made to 2 pre-school kindergartens and 56 children were examined; of these 44 were new cases and 5 defects were notified.

As all the schools are in underprivileged suburbs and contain large partially illiterate migrant populations, as well as many multi-problem families, 15 of the new schools were examined fully, and 2 partially, at the expense of schools in the more prosperous Eastern Suburbs areas. Altogether 129 schools were visited, and 17,988 children were examined, 348 defects were notified and 1,791 parents were interviewed; 212 home visits were made by nurses.

There were 1,070 medical officer appointments at the centre, of which 490 were new cases.

The 2 speech therapy clinics had a total of 1,075 attendances and in addition, 76 visits were made to schools.

There were 44 sessions at the hearing unit and 225 cases were investigated, including 156 new cases.

The child guidance clinic had a total case load of 443, which included 317 new cases. Weekly case conferences were held which were attended by the child guidance team, speech therapists and child health teams.

A diagnostic team visited Dubbo in October.

The immunization of state wards in child welfare homes has continued and the immunization of state wards in foster homes has now started. Of 37 wards who originally applied, 16 completed this immunization programme, some were up to date with their immunization but some failed to keep their appointments.

Monthly conferences were held for all child health centre staffs as an educational programme. Guest speakers were invited; films were shown and talks were given by staff members.

Demonstrations were arranged for groups of newly recruited medical officers and nurses, and for groups from Sydney Teachers' College, Vocational Guidance Bureau and a group from the voluntary agencies and induction courses were arranged for newly recruited medical officers and nurses.

The senior medical officer was appointed as honorary clinical assistant to the Professor of Paediatrics, University of New South Wales and conducted a weekly clinic ($\frac{1}{2}$ day) at the Prince of Wales Hospital for the assessment of low-weight children.

There were 142 cases interviewed at the diet clinic and of the 50 children seen, 66 per cent recorded a weight loss.

Talks were given to parent groups and discussions were held with special groups of parents of handicapped children.

During the year there have been a number of staff changes and this has led to some difficulties in the work at the centre.

Forest Lodge Child Health Centre

Following reorganization of the child health centre boundaries in 1971, there were increases in the number of pre-school kindergartens, normal schools, special units and Child Welfare Department institutions in this child health centre area.

The nursery school population was increased by 100 and medical examinations were carried out at 26 pre-school kindergartens and nursery schools. One thousand and thirty-seven children were examined of which 710 were full examinations and 95 defects were notified. There are, however, known to be 5 other pre-school kindergartens in the area to which a service has not been offered.

There are 11 additional normal schools in the area and the school population has increased by 11,000. Of the 110 schools in the area, 58 were fully examined and 1 partially. Altogether, 16,579 children were examined, of which 4,849 were full examinations and 209 defects were notified. One thousand nine hundred and thirty-eight parents were interviewed by the medical officer and 392 home visits were made by nurses. Some of the 1969 and 1970 intake were examined at the schools visited. The percentage of language problems in migrants is still increasing and the turnover in schools is still high.

There was an increase of 9 special schools in the area, increasing the number of children in these units by 400. Visits were made to 18 special schools and units.

Medical officer appointments at the child health centre numbered 847, of which 615 were new cases.

From the beginning of February, the speech therapy clinic was conducted on 3 days per week only. The speech therapist continued to visit the schools to discuss children seen at the clinic and to screen children referred by the teachers. There was a total of 858 attendances at the clinic.

The hearing unit had 24 sessions and 162 cases were investigated. There were 67 new cases.

The total case load for the child guidance clinic was 379, of which 184 were new cases. There were 50 sessions at the evening clinic.

A diagnostic team visited Inverell and forty families were seen.

Examinations were carried out at 5 child welfare institutions where 470 children were immunized with D.P.T. and 529 with Sabin vaccine. One hundred and fifty-four Schick tests were carried out. One hundred and fifty-nine Little Brothers were examined.

Regular staff meetings were held at the centre and were attended by school counsellors and visitors from other organizations.

Student social workers and psychologists attended the centre for training throughout the year, and the staff participated in in-service training and community projects.

The obesity clinic held ten sessions.

Further improvements were carried out to the building during the year.

There was a reduction of the amount of work completed at the centre, owing to staff absences other than for recreation leave, and commitments outside the child health centre.

Ryde Child Health Centre

A weekly well baby clinic was conducted at Gladesville Baby Health Centre where 286 children were examined, of which 269 were new cases, and 127 defects were notified.

The number of pre-school kindergartens and nursery schools requesting a service increased from 23 to 31, but it was possible to examine only 13 of these. One thousand and ninety-one children were examined of which 1,010 were full examinations, and 164 defects were notified.

Following the change in boundaries in January, 1971, the number of schools in the area was reduced by 7 and the number of children by 6,777. However, the area covered was increased. Of the 85 schools in the area 74 were fully screened, 4 partially screened, and 7 were not visited. Altogether, 21,837 children were examined and this included 4,750 full examinations. There were 1,188 parents interviewed and 409 defects were notified. The school nurses made 1,535 home visits; 12 special schools were visited.

Medical officer appointments at the child health centre numbered 851, of which 629 were new cases. Appointments were arranged on request at Berowra and West Pennant Hills, where the clinics were held at a public school, and a private pre-school and this extension of the services was greatly appreciated by those who attended.

The total attendances at the 3 speech therapy clinics numbered 3,513 for 1971, an increase of 35 from 1970. Two satellite clinics were established at West Pennant Hills Baby Health Centre and at Jack and Jill Kindergarten, Asquith, to serve families living at a distance from the child health centre. They are conducted on a part-time basis. A stammering group for young adolescents was held for a 2 weeks' intensive course in the January school holidays.

There were 51 sessions at the hearing unit, and the total number of cases investigated was 374, of which 205 were new cases.

At the child guidance clinic, the total case load was 340, which included 171 new cases. Weekly evening sessions, staffed by 1 psychologist and 1 social worker, have been started for families unable to attend during office hours.

The diagnostic team visited Lismore in September consisting of senior medical officer, psychologist and social worker.

Medical examinations and immunizations were carried out at two child welfare establishments and for wards in foster placements.

Speech therapy students in 1st, 2nd and 3rd years attended the speech therapy clinic for training

Lectures were given by the medical officer in charge to private organizations, Child Welfare Department trainee field officers for supervision of the mentally handicapped, OF teachers' conference, trainee remedial teachers, in-service course for community nurses, school counsellors, student and community nurses at Ryde Psychiatric Centre and the Child Welfare Department Staff Training, programme and foster parents seminar. One speech therapist lectured at William Balmain Teachers College to remedial teachers in training. The medical officer in charge was also involved in a parent education group for special children, meetings of parents and committees for special groups, and as chairman of the Ryde Municipality Committee. Talks were given to mothers' clubs and parents and citizens' groups.

Yagoona Child Health Centre

The redistribution of child health centre boundaries in 1971 resulted in the reduction of pre-school and school population in the area by 8,864.

One medical officer participated regularly in the Preparation for Parenthood classes.

Three well baby clinics were conducted at Bankstown, Revesby and Yagoona Baby Health Centres, and 569 children were examined. Of these, 510 were new cases, and 85 defects were notified.

The number of pre-school kindergartens in the area was reduced by 3. Visits were made to 11 pre-school kindergartens and nursery schools, and 462 children were examined. Of these, 441 were new cases, and 8 defects were notified.

The number of schools in the area was reduced by fifteen, which included nine State, four Catholic and two special schools.

Of the 70 schools in the area, 69 were fully examined, and 1 partially; 17,540 children were examined, including 4,345 full examinations and 209 defects were notified; 977 parent interviews were carried out by the medical officers and 619 home visits were made by the nurses. Visits were made to 10 special schools during the year.

The medical officer appointments at the child health centre numbered 927, of which 490 were new cases.

The total attendance at the 2 speech therapy clinics was 2,221 and the waiting list has been kept at a minimum. One speech therapist has visited the OL classes at East Hills Public School twice weekly, to participate in the educational and therapeutic programme of each child enrolled. The other speech therapist has provided a consultant service to the Intellectually Retarded and Physically Handicapped Children's Association school at Revesby and the OF school at Bankstown.

The hearing unit has been operating fortnightly, with a total of 22 sessions for the year; 125 cases were investigated, of which 66 were new.

The total case load for the child guidance clinic for 1971 was 292, of which 155 were new cases. The social worker who has been appointed to the staff has led regular and fruitful discussions with the nursing staff on visiting, interviewing, and counselling theory and techniques. Her appointment has significantly improved the quality of the service offered.

A pilot adolescent group was conducted towards the end of the year and will result in the establishment of an adolescent group as a permanent service.

A consultant psychiatrist service has been available from Rydalmere Psychiatric Hospital one afternoon per week, which has provided valuable support, and a liaison with the community psychiatric services. Staff from this hospital has also conducted a day care programme at the centre on three mornings each week for adult psychiatric outpatients. This has been of no direct benefit to the child health centre but has been a worthwhile contact with another community service.

A diagnostic team, consisting of psychologist, social worker and senior medical officers visited Parkes and a speech therapist from Orange joined the team. Fewer children were seen than previously, but the examinations were more comprehensive and follow-up arrangements have been made through a local social worker.

The child health centre staff, including medical officers, has met twice weekly for case discussions and conferences and to plan investigations and therapeutic programmes.

The senior medical officer gave a series of lectures on child health to trainee child welfare officers and led case discussions at the nurses in-service training course. Talks were given and discussions held for local parents and citizens' groups and mothers clubs, pre-school and recreation clubs.

An immunization survey was conducted in the area in 3rd term 1971. Of 748 forms distributed, 666 were returned. The survey revealed that, against diphtheria and tetanus, 48 required primary immunization, 35 the first booster and 85 the second booster, and against poliomyelitis 70 required primary immunization, 116 a first booster and 128 a second booster. The majority of those requiring further immunization were migrants.

TABLE III—EXAMINATIONS IN PRIMARY SCHOOLS AND HIGH SCHOOLS (OFFICE OF THE ASSISTANT DIRECTOR AND ASSOCIATED CHILD HEALTH CENTRES)

	Office of Assistant Director, Manly-Warringah, Sutherland	Bexley	Chatswood	Eastern Suburbs	Forest Lodge	Ryde	Yagoona	Total
Primary schools—								
Full examinations by medical officers	4,317	4,038	4,007	4,129	4,849	4,750	4,345	30,435
Review examinations, medical officers and nurses (all grades)	8,052	7,033	6,267	8,677	8,104	9,201	13,929	61,263
Total	12,369	11,071	10,274	12,806	12,953	13,951	18,274	91,698
High schools—								
Review examinations	6,854	8,673	6,041	5,182	3,626	8,684	5,894	44,954
Interviews—								
Parent interviews (Medical officer)	1,548	358	467	1,791	1,938	1,188	977	8,267
Follow-up interviews (nurses)	2,608	689	328	829	750	2,231	1,016	8,451
Home visits, special home visits and interviews (nurses)	4,032	282	774	212	392	1,535	619	7,846

Table IIIA—Examinations in Primary Schools and High Schools, Health Districts

	Western Metropolitan				Newcastle								
	Camden, Campbell-town Area	Blacktown Area	Cabramatta Child Health Centre	Parramatta Child Health Centre	Child Health Centre	Rem. Health District	North Coast	North Western	Western	Riverina	Broken Hill	South Coast	Total
Primary schools—													
Full examinations by medical officers	1,677	2,527	4,918	5,122	10,661	3,877	3,889	2,998	6,015	6,115	N.A.	8 353	56,152
Review examinations, medical officers and nurses (all grades)	942	4,493	7,042	5,730	16,027	5,050	6,944	6,194	4,390	4,172	N.A.	12,176	73,160
Total	2,619	7,020	11,960	10,852	26,688	8,927	10,833	9,192	10,405	10,287	3,046	20,529	132,358
High schools—													
Review examinations	N.A.	4,493	5,133	6,968	9,800	N.A.	2,464	5,441	5,735	3,381	N.A.	9,611	53,026
Interviews—													
Parent interviews (medical officers)	N.A.	860	946	2,472	1,773	N.A.	194	12	189	469	407	1,323	8,645
Follow-up interviews (nurses) ..	N.A.	N.A.	893	1,393	461	N.A.	861	356	2,412	N.A.	N.A.	297	6,673
Home visits, special home visits and interviews (nurses) ..	N.A.	N.A.	2,080	1,362	623	N.A.	282	149	8	N.A.	N.A.	231	4,735

Table IV—Notified Defects—High School and Primary School Examinations (Office of Assistant Director and Associated Child Health Centres)

	Office of Assistant Director, Manly-Warringah, Sutherland	Bexley	Chatswood	Eastern Suburbs	Forest Lodge	Ryde	Yagoona	Total
High schools—								
Total number notified	296	332	146	348	209	409	209	1,949
Total number examined	6,854	8,673	6,041	5,182	3,626	8,684	5,894	44,954

Table IVa—Notified Defects—High School and Primary School Examinations—Health Districts

	Western Metropolitan				Newcastle		North Coast	North Western	Western	Riverina	Broken Hill	South Coast
	Camden-Campbelltown Area	Blacktown Area	Cabramatta Child Health Centre	Parramatta Child Health Centre	Child Health Centre	Rem. Health District						
High schools—												
Total number notified	N.A.	550	322	334	363	N.A.	125	265	N.A.	N.A.	N.A.	483
Total number examined	N.A.	4,493	5,133	6,968	9,800	N.A.	2,624	5,441	5,735	3,381	N.A.	9,611

Table V—Medical Officers Appointments—Child Health Centres Associated With the Office of the Assistant Director and Health Districts

	Bexley	Chatswood	Eastern Suburbs	Forest Lodge	Ryde	Yagoona	Western Metropolitan		Newcastle	Total
							Cabramatta	Parramatta		
New cases	383	471	490	615	629	490	580	579	867	5,104
Review Cases	122	803	580	232	222	437	295	433	610	3,734
Total	505	1,274	1,070	847	851	927	875	1,012	1,477	8,838

Table VI—Pre-School Kindergartens—Office of the Assistant Director and Associated Child Health Centres

	Office of the Assistant Director	Bexley	Chatswood	Eastern Suburbs	Forest Lodge	Ryde	Yagoona	Total
Number of pre-school kindergartens	30	34	28	2	26	13	11	144
Full examinations	1,269	517	1,046	23	710	1,110	441	5,116
Review Examinations	158	140	126	4	327	81	21	857
Total	1,427	657	1,172	27	1,037	1,191	462	5,973
Number of defects notified	570	26	40	5	95	178	8	922

Table VIa—Preschool Kindergartens—Health Districts

	Western Metropolitan			Newcastle		North Coast	North Western	Western	Riverina	Broken Hill	South Coast	Total
	Blacktown Area	Cabramatta Child Health Centre	Parramatta Child Health Centre	Child Health Centre	Remainder of Health District							
Number of pre-school kindergartens	3	16	11	9	N.A.	N.A.	5	2	8	N.A.	5	59
Full examinations	91	467	392	537	N.A.	N.A.	19	17	322	N.A.	277	2,122
Review examinations	Nil	23	17	31	N.A.	N.A.	208	..	15	N.A.	35	329
Total	91	490	409	568	N.A.	N.A.	227	17	337	N.A.	312	2,451
Number of defects notified	10	38	35	54	N.A.	N.A.	9	18	57	N.A.	55	276

Table VII—Hearing Units

	Bexley	Chatswood	Eastern Suburbs	Forest Lodge	Ryde	Yagoona	Western Metropolitan			Total
							Cabramatta	Parramatta	Blacktown	
Number investigated	389	317	225	162	374	125	269	633	434	2,928
Results of investigations—										
New cases normal hearing	52	82	54	29	88	37	2	12	..	..
Review cases normal hearing	33	94	25	38	73	15	24	87	..	..
New cases remediable—										
(a) Referred for review	31	63	55	34	51	18	112	126	..	..
(b) Referred for treatment	27	29		13	62	32	31	58	..	..
(c) Receiving treatment	Nil	4		1	60	6	4	Nil	..	..
Review cases remediable—										
(a) For review	21	83	13	45	70	16	65	176	..	..
(b) Referred for treatment	15	14		6	20	14	13	47	..	..
(c) Receiving treatment	2	6		1	73	1	28	9	..	..
Cases recommended for O.D. classes	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	..	..
Cases recommended for deaf school	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	..	..
New cases chronic deafness	6	2	6	3	15	2	Nil	14	..	..
Review cases chronic deafness (includes hearing aids)	28	15	9	7	14	9	Nil	104	..	..
Hearing aids recommended	1	Nil	1	1	1	1	Nil	Nil	..	..

TABLE VIII—CHILD GUIDANCE CLINICS—OFFICE OF THE ASSISTANT DIRECTOR—CHILD HEALTH CENTRES—HEALTH DISTRICTS

	Office of Assistant Director			Child Health Centres						Western Metropolitan		Newcastle	Total
	Brisbane Street	Minda	Yasmar	Bexley	Chatswood	Eastern Suburbs	Forest Lodge	Ryde	Yagoona	Cabramatta	Parramatta		
New cases 1971	559	895	345	248	228	317	184	171	155	112	327	383	3,924
Continued from 1970	620	..	..	87	298	110	144	156	118	68	99	N.A.	..
Old cases reopened	24	..	..	51	32	16	51	13	19	9	112	N.A.	..
Cases closed 1971	489	895	345	282	181	360	242	185	172	116	404	N.A.	..
Attending and continuing to 1972	714	..	..	104	586	83	137	154	120	73	134	N.A.	..
Total case load 1971	1,203	895	345	386	621	443	379	340	292	189	538	N.A.	5,631
Age range—													
0–5 years	125	..	1	32	43	38	36	14	21	7	58	N.A.	..
6–11 years	449	61	53	92	115	142	106	93	100	61	202	N.A.	..
12–15 years	192	578	187	51	74	63	38	57	32	43	63	N.A.	..
Over 15 years	43	256	104	73	28	74	4	7	2	1	4	N.A.	..
Referring agency—													
Personal application by parent	419	..	..	4	129	79	84	68	78	30	160	N.A.	..
Children's Court or police	63	895	345	37	10	74	..	1	1	3	7	N.A.	..
Department of Child and Social Welfare	12	..	..	23	8	14	4	4	6	4	3	N.A.	..
Education Department	126	..	..	35	48	6	56	48	38	33	51	N.A.	..
Social agencies, hospital, Immigration Department, etc.	49	..	..	21	12	14	..	6	3	16	14	N.A.	..
Private practitioners, psychiatrists	76	..	..	41	25	20	14	22	10	8	65	N.A.	..
Bureau officer (medical officers, nurses)	59	..	..	78	11	98	12	16	6	9	12	N.A.	..
Speech therapist	5	..	..	9	47	12	14	6	13	9	15	..	..

TABLE IX—CHILD GUIDANCE CLINICS—OFFICE OF ASSISTANT DIRECTOR—CHILD HEALTH CENTRES—HEALTH DISTRICTS

	Office of Assistant Director			Child Health Centres						Western Metropolitan		Newcastle
	Brisbane Street	Minda	Yasmar	Bexley	Chatswood	Eastern Suburbs	Forest Lodge	Ryde	Yagoona	Cabramatta	Parramatta	
Diagnostic categories of closed cases—												
Development disorders	29	12	5	9	23	8	5	5	24	20	31	N.A.
Organic syndrome	15	27	2	21	17	24	4	5	4	5	30	N.A.
Reactive to environment	284	299	256	84	45	137	146	23	31	57	113	N.A.
Disturbed social behaviour	87	192	68	94	24	88	26	44	3	9	87	N.A.
Psychoneurotic disorder	60	164	6	33	60	52	30	30	90	13	110	N.A.
Psychotic disorder	2	2	1	7	2	8	4	1	3	8	1	N.A.
Not included above	12	199	7	..	10	..	27	77	..	4	32	N.A.
Results of treatment (closed cases)—												
(a) Diagnostic only. No treatment required or offered	178	892	345	79	19	120	71	79	12	36	167	N.A.
(b) Treatment offered but declined to return	128	..	..	9	20	18	51	33	8	27	87	N.A.
(c) Treatment given with unsatisfactory results	8	1	..	11	12	12	5	6	5	17	23	N.A.
(d) Treatment given, symptomatic improvement	159	2	..	107	101	100	103	53	83	25	72	N.A.
(e) Treatment satisfactory, good readjustment	16	..	..	76	29	190	12	14	64	11	55	N.A.

TABLE X—CHILD GUIDANCE CLINICS—OFFICE OF ASSISTANT DIRECTOR—CHILD HEALTH CENTRES—HEALTH DISTRICTS

	Brisbane Street	Minda	Yasmar	Bexley	Chatswood	Eastern Suburbs	Forest Lodge	Ryde	Yagoona	Cabramatta	Parramatta	Newcastle
Psychiatrists—												
Diagnostic interviews	1,095	80	21	339	163	440	122	94	56	7	143	111
Review sessions	977	..	..	307	176	80	61	62	130	3	76	97
Therapy sessions	154	..	..	520	834	240	57	120	..	4	..	114
Group therapy sessions	6	..	..	..	147	..	4	..	..	..	..	..
Psychologists—												
Diagnostic testing sessions	282	895	345	233	281	204	124	207	179	87	186	465
Diagnostic interviews				30	208	320	178	2	51	61	179	159
Review sessions	36	15	..	27	51	70	143	8	72	9	75	69
Individual therapy sessions	1,036	21	..	1,084	924	800	539	1,278	1,471	303	1,062	569
Group therapy sessions	..	..	..	..	80	..	217	117	11	47	48	110
Home and school visits	..	..	..	3	164	4	72	5	8	13	..	..
Psychiatric social workers—												
Diagnostic sessions	482	492	358	56	60	207	290	88	130	67	5	141
Review sessions	109	26	..	..	17	137	84	14	147	..	283	52
Individual therapy sessions	973	14	..	550	439	939	830	424	686	307	534	286
Group therapy sessions	..	..	..	27	88	4	48	55	28	110	20	1
Home and school visits	..	..	..	5	43	27	48	7	38	117	110	85

TABLE XI—SPEECH THERAPY CLINICS—OFFICE OF THE ASSISTANT DIRECTOR AND ASSOCIATED CHILD HEALTH CENTRES

	Head Office	Brookvale	Child Welfare Department	Bexley	Chatswood	Eastern Suburbs	Forest Lodge	Ryde	Yagoona
Number of clinics	1	1	2	3	3	2	2	3	2
Current January, 1971	..	15	79	50	33	46	..	71	35
Follow-up January, 1971	113	..	86	123	146	84	..	..	..
Under observation January, 1971	..	56	..	45	45	30	..	231	78
Admitted to current	14	68	87	99	98	41	34	117	72
Admitted to follow-up	97	..	135	97	57	75	236	..	..
Admitted to under observation	..	119	..	28	137	61	2	257	125
Discharged from current	7	77	78	68	99	62	70	114	67
Discharged from follow-up	91	..	102	159	148	51	90	..	..
Discharged from under observation	..	100	..	61	39	49	53	184	131
Current December, 1971	7	12	90	64	33	28	..	74	40
Follow-up December, 1971	119	..	119	58	70	102	130	..	..
Under observation December, 1971	..	72	..	12	123	21	27	304	72
Initial interviews	188	93	199	239	191	228	146	302	134
Treatment not indicated	61	36	34	29	31	90	25	51	31
Awaiting initial interview	11	14	9	32	40	..	29	48	2
Awaiting current treatment	..	3	..	2	25	3	63	216	8
Reviews	169	152	351	312	136	75	168	171	191
Total number seen	321	178	421	1,296	380	329	259	686	238
Total number attendances	649	1,281	2,083	1,424	2,620	1,075	858	3,513	2,221
School visits	28	10	8	9	40	76	9	11	16

TABLE XIA—SPEECH THERAPY CLINICS—OFFICE OF THE ASSISTANT DIRECTOR AND ASSOCIATED CHILD HEALTH CENTRES

	Western Metropolitan		Newcastle	North Coast		North West	Western			Riverina	South Coast
	Cabramatta	Parramatta		Lismore and Murwillumbah	Grafton and Coffs Harbour	Tamworth	Orange and Bathurst	Dubbo	Katoomba-Springwood	Wagga Wagga	Wollongong
Number of clinics	2	2	2	1	1	2	1	1	1	1	2
Current January, 1971	40	12	30	18	47	32	37	20	13	N.A.	25
Follow-up January, 1971	..	98	..	79	34	168	81	..	..	N.A.	83
Under observation January, 1971	485	..	367	..	16	23	41	..	4	N.A.	50
Admitted to current	50	80	58	17	33	108	60	15	58	N.A.	94
Admitted to follow-up	..	203	..	22	34	160	..	..	..	N.A.	..
Admitted to under observation	332	..	215	..	39	32	111	..	20	N.A.	157
Discharged from current	82	92	73	35	57	74	72	35	34	N.A.	81
Discharged from follow-up	..	189	..	101	17	177	81	..	..	N.A.	..
Discharged from under observation	93	..	291	..	12	24	54	..	6	N.A.	246
Current December, 1971	8	..	15	..	23	66	14	..	20	N.A.	38
Follow-up December, 1971	..	113	..	..	51	151	..	..	..	N.A.	..
Under observation December, 1971	714	..	291	..	43	31	233	..	19	N.A.	44
Initial interviews	406	250	208	24	129	185	141	16	72	N.A.	142
Treatment not indicated	118	53	38	4	9	21	8	3	3	N.A.	11
Awaiting initial interview	108	15	28	24	19	9	..	..	..	N.A.	10
Awaiting current treatment	90	31	44	..	7	22	21	18	25	N.A.	80
Reviews	327	277	363	42	23	463	148	..	1	N.A.	198
Total number seen	629	477	708	140	180	412	388	56	116	N.A.	490
Total number attendances	2,071	1,970	2,365	236	1,064	2,637	2,034	257	754	N.A.	1,325
School visits	19	20	6	12	11	59	25	3	..	N.A.	4

TABLE XII—TEACHERS COLLEGES—MEDICAL STAFF—STUDENT ENROLMENT—HEALTH EDUCATION

College	Sydney	Alexander Mackie	William Balmain
Authorized staff	1 S.M.O. (Admin.) 1 S.M.O. (Health Education) 2 M.O.'s	1 S.M.O.	1 S.M.O. 1 part-time M.O. from December, 1971
Total enrolment	3,660	734 (198 part-time)	833
Number of separate health education courses	8	7	6
Total number of lectures given per week	32	4	17
Number of examination and test papers set	38	2	6
Total examination papers and assignments corrected	2,165	232	908
Number of health demonstration lessons arranged	20	4	8
Number of students supervised at practice teaching	35	6	24
Number of student visits arranged to places of interest	16	..	1
Number of guest speakers invited	4	1	1
Student consultations for medical condition	2,151	450	390
Student consultations for counselling	510	370	92
Number of students immunized	257	50	..
Number of students assessed for fitness to resume	55	150	16
Staff consultations for first-aid	185	185	6
Number of outgoing medical appointments arranged	765	116	385

DIVISION OF MATERNAL AND PERINATAL STUDIES

Director: Maureen Grattan-Smith, M.B., B.S., D.P.H.

Location: 86–88 George Street North, Sydney

STAFF

2 Medical officers.
1 Typist.

The Division of Maternal and Perinatal Studies has now been in existence for 2 years although the productive work time can only be counted as 18 months because of the time lost in obtaining accommodation and staff. In 1971, many of the projects were completed. A volume of information has been obtained relating to the practice of obstetrics and neonatal paediatrics in this State.

The postwar "baby boom" has produced the predictable result of an increase in the number of births. Further, all mortality rates for 1971 are below any other year and these are set out in table 1.

TABLE 1—NEW SOUTH WALES STATISTICS, 1970 AND 1971

	1970		1971	
Live births	88,448		98,466	
Total births	89,602		99,648	
Crude birth rate (live births per 1,000 mean population)	19·33		21·40	
	Number	Rate	Number	Rate
Maternal mortality rate (per 1,000 total births)	22	0·25	15	0·15
Infant mortality rate (per 1,000 live births)	1,743	19·71	1,710	17·37
Stillbirth rate (per 1,000 total births)	1,154	12·88	1,182	11·86
Perinatal mortality rate (per 1,000 total births)	2,463	27·49	2,442	24·51

The stillbirth and perinatal mortality figures are based on the new definitions, stillbirths of 20 weeks gestation or 400 grammes weight, live births and neonatal deaths on presence of heart beat at birth.

It should be remembered that the rise in stillbirth and perinatal mortality rates compared with some isolated years prior to 1969 is only an apparent rise. Prior to 1969 the definition of a stillborn child was limited to a gestation period of 28 weeks. Under the new definition in force since January, 1969, 20 weeks or 400 gms is the baseline for stillbirths. Table 2 demonstrates this artifact.

TABLE 2—SUMMARY OF LIVE BIRTHS AND MATERNAL, FOETAL AND INFANT DEATHS, 1949–1971 (N.S.W.)

Year	Live-Births	Maternal Deaths (a)	Deaths under 1 year of age infant	Deaths under 28 days of age Neonatal	Stillbirths (b)	Perinatal Deaths (c)
			NUMBER			
1940	49,382	209	1,927	1,263	1,342	2,605
1945	61,662	139	1,889	1,344	1,540	2,884
1950	71,592	80	1,936	1,345	1,406	2,751
1955	74,407	55	1,850	1,288	1,243	2,531
1960	81,983	56	1,735	1,250	1,261	2,511
1965	78,069	25	1,492	1,087	947	2,034
1968	81,696	28	1,525	1,123	806	1,929
1969	86,036	15	1,625	1,235	1,080	2,315
1970	88,448	22	1,743	1,309	1,154	2,463
1971	98,466	15	1,710	1,260	1,182	2,442
			RATE			
	(d)	(e)	(e)	(e)	(f)	(f)
1940	17·78	4·23	39·02	25·58	26·46	51·36
1945	21·14	2·25	30·63	21·80	24·37	45·63
1950	22·24	1·12	27·04	18·79	19·26	37·69
1955	21·30	·74	24·86	17·32	16·43	33·46
1960	21·38	·68	21·16	15·25	15·15	30·16
1965	18·71	·32	19·11	13·92	11·98	25·74
1968	18·62	·34	18·67	13·75	9·77	23·38
1969	19·21	·17	18·89	14·35	12·40	26·57
1970	19·33	·25	19·71	14·80	12·88	27·49
1971	21·40	·15	17·37	12·80	11·86	24·51

(a) Including criminal abortion.

(b) Until the end of 1968, a stillborn child was defined as "any child of 7 months gestation or over not born alive and includes any child not born alive which measures at least 14 inches, but does not include any child which has actually breathed".

As from 1st January, 1969, a stillborn child means "a child who (a) is of at least 20 weeks gestation, or at least 400 grammes weight at delivery and (b) has not breathed after delivery." For statistical purposes the presence of a heart beat is the criterion of life.

(c) Stillbirths plus neonatal (under 28 days of life) deaths.

(d) Number per 1,000 mean population.

(e) Number per 1,000 live births.

(f) Number per 1,000 total births (live and still).

The table also gives details of maternal, infant, stillbirth, neonatal (under 28 days) and perinatal mortality rates in 5-year periods up to and including 1968 and the following 3 sequential years. The continuing steady fall in all mortalities in this State is gratifying.

Comparison between other States and overseas countries is not valid because of the difference in definitions and criteria for extracting mortality rates also the method of collection of deaths. These basic factors differ and the difference means that comparisons are improper. A small variation is of no significance as this will happen on a year-to-year basis between States and countries and even within one State. Larger variations are, of course, indicative of many things if the comparisons are made between countries of different standards of living, ethnic groups, etc. In looking at rates for other Australian States some significant differences are difficult to explain. Table 3 shows perinatal mortality rates divided into stillbirths and neonatal rates for 1970. The New South Wales figures have been adjusted to 28 weeks for stillbirths to standardize the figures.

TABLE 3—PERINATAL MORTALITY RATES, 1970 (WITH 28 WEEKS GESTATION AS QUALIFICATION)

	Stillbirths		Neonatal Deaths		Perinatal Deaths	
	Number	Rate	Number	Rate	Number	Rate
New South Wales	888	9·9	1,309	14·8	2,197	24·59
Victoria	782	10·6	778	10·7	1,560	21·14
Queensland	312	9·2	476	12·7	788	20·82
South Australia	200	8·8	276	12·2	476	20·86
Western Australia	211	9·7	315	14·6	526	24·10
Tasmania	80	9·7	75	9·2	155	18·75
Northern Territory	30	11·3	58	22·1	88	33·54
A.C.T.	29	8·3	41	11·8	70	20·14
Australia	2,532	9·74	3,328	12·92	5,860	22·53

It can be seen that there are minor variations of no significance in stillbirth rates except for Northern Territory, where one would expect higher rates throughout because of the large number of Aboriginal people. The neonatal mortality rate, however, does have significant differences. It is difficult to offer any rational explanation of why New South Wales and Western Australia have a neonatal mortality rate around 14·5 and Tasmania (9·2) and Victoria (10·7) are so much lower. One can only suspect that some of the neonatal deaths in these two States are "lost" in general mortality statistics. It does however explain why the infant mortality (under 12 months of age) is always lower in these two States. The introduction of the compulsory perinatal death certificate effective in all States in 1972 may assist in clarifying this mystery. The low rate in the A.C.T. would be expected because of the higher socioeconomic status of this Territory.

EX-NUPTIAL

Again there has been a rise in the number of ex-nuptial births as a total and as a percentage of live-births. These births made up 9·8 per cent of all births in 1971, making a rate of 2·10 per 1,000 population.

TABLE 4—LIVE-BIRTHS OF EX-NUPTIAL CHILDREN 1934–1971 (N.S.W.)

Year	Total live births Ex-nuptial	Percentage of Total live births	Rate per 1,000 Population
1934	2,069	4·77	·79
1947	2,783	4·01	·93
1957	3,438	4·33	·95
1967	6,300	7·99	1·46
1968	6,622	8·11	1·51
1969	6,860	7·97	1·53
1970	7,455	8·43	1·63
1971	9,674	9·82	2·10

Perhaps the most significant figure however is the stillbirth rate for this group. Fifteen per cent of the stillbirths are ex-nuptial mothers as against 9·8 per cent of live-births. This makes the ex-nuptial stillbirth rate 62 per cent higher than nuptial stillbirths. There is little doubt that this is a high risk group of mothers. Special attention is to be paid to the group in 1972 as the lack of antenatal care is without doubt the primary cause of this higher stillbirth rate.

PERINATAL MORTALITY

The perinatal mortality rate is now accepted as the index of the standards of medical care in developed countries replacing the old indices of maternal and infant mortality. The perinatal rates have been struck for each local government area in New South Wales and are shown in tabular and map form in appendix I and II. Care should be taken in making comparisons for the same reasons which explain the high variations in certain areas. These are:

(1) Numbers are small in certain areas particularly in the country districts and some of the metropolitan local government areas. When numbers are small, variations are great in rates.

(2) Boundaries of municipalities and shires are constantly being changed so that areas will show a good rate and then have added to it portion of another area with a low socioeconomic standard and so the mortality rates will make a startling jump.

Appendix III shows all the usual mortality rates, neonatal, perinatal, infant etc., and the same difficulties apply in this table as above.

CAUSES OF PERINATAL LOSS

The cause of death for stillbirths and neonatal deaths i.e. all perinatal deaths is referred back to the morbid condition of the mother since the publication of the *Eighth Revision of the International Classification of Diseases*. Table 5 shows the causes of death for New South Wales for 1969 and 1970. Figures for 1971 will not be available until late in 1972.

TABLE 5—CAUSES OF PERINATAL DEATHS, 1969 AND 1970 (N.S.W.)

Cause of death	Number of deaths 1969	Number of deaths 1970
Maternal conditions unrelated to pregnancy	140	146
Toxaemias of pregnancy	108	124
Maternal *ante partum* and *intra partum* infection	18	9
Difficult labour and birth injury without mention of cause	158	133
Other complications of pregnancy and childbirth	340	369
Conditions of placenta	420	517
Conditions of umbilical cord	166	149
Haemolytic disease of new born	84	75
Anoxic and hypoxic conditions not elsewhere classified	222	255
Immaturity unqualified	116	134
Other conditions of foetus and new born	152	154
Congenital anomalies	308	312
Infections and other diseases of foetus and new born	79	74
External causes of injury to newborn	4	12
All causes	2,315	2,463

MATERNAL AND PERINATAL MORTALITY COMMITTEE

During the year 1971 there were eight meetings of the Maternal and Perinatal Mortality Committee and twenty-eight maternal deaths were finalized by the committee. The breakdown of these deaths is shown in the following table:

TABLE 6—DEATHS FINALIZED DURING 1971

Year of death	Number of deaths		
	Maternal	Associated	Total
1969	2	1	3
1970	11	7	18
1971	3	4	7
Total	16	12	28

In addition to the above twenty-eight deaths a further three deaths were considered by the committee but a final decision was not arrived at as further information was deemed necessary. These deaths will be resubmitted in due course. Of the sixteen maternal deaths finalized the cause of death as decided by the committee is shown in the following table.

TABLE 7—CAUSES OF MATERNAL DEATHS 1971

Cause of death	Number of Deaths	Total
Pulmonary embolism	..	5
During pregnancy	1	..
Puerperal	4	..
Toxaemias of pregnancy	..	3
Eclampsia	2	..
Toxaemia unspecified	1	..
Amniotic fluid embolism	..	2
During pregnancy	1	..
Puerperal	1	..
Abortion	..	2
Criminal	1	..
Unstated	1	..
Post partum haemorrhage	1	1
Ectopic pregnancy	1	1
Diabetes mellitus	1	1
Ruptured uterus	1	1
Total	16	16

In addition to the deliberations and discussions on the cause of death in women dying during pregnancy, childbirth or the first 6 weeks thereafter, various other topics were discussed with a view to improving obstetric and perinatal care in New South Wales.

AVAILABILITY OF FACILITIES FOR OBSTETRIC TRAINING

With the introduction of the National Health Act, 1970, it is envisaged that the number of patients attending antenatal clinics at public hospitals will decrease which, in turn, will make less deliveries available for the training of medical students and pupil midwives. This was brought to the notice of the Maternal and Perinatal Mortality Committee and it was decided that in the training of medical students and pupil midwives the emphasis should be based on the quality of the training rather than the quantity i.e. the supervision of fewer deliveries with more expert tuition. This would be followed later, after the completion of training, by more advanced instruction for those intending to practise obstetrics. Notification of these discussions was sent to the Deans of the Faculty of Medicine at the University of Sydney and the University of New South Wales, to the Secretary, The Nurses Registration Board, and to the Royal College of Obstetricians and Gynaecologists.

RUBELLA

This subject has been discussed on several occasions during the year. This included discussions on the recommendations of the National Health and Medical Research Council on:

(a) Immediate management of pregnant women exposed to Rubella.

(b) Vaccination against Rubella—
  (i) In school girls under the age of 14 years.
  (ii) Routine vaccination of women in the postpartum period.

Immediate Management of Pregnant Women Exposed to Rubella

Instruction on procedure in such cases has been laid down by the National Health and Medical Research Council and this has been distributed to the medical profession by publications in the medical press.

Vaccination against Rubella

The campaign of vaccination in schools has started satisfactorily but the response at obstetric hospitals to postpartum vaccination has been disappointing. This was considered to be due to fear of infection being transmitted by vaccinees, the development of side-effects and the failure of some women to become seropositive after vaccination, thereby leading to a sense of false security.

Information on rubella vaccination is at present being obtained from several sources including the United Kingdom and the United States of America. This material will be presented to the major committee as soon as possible, after which it is hoped that routine vaccination in the immediate postpartum period will be started at all hospitals with obstetric beds in New South Wales.

National Maternal Mortality Form

The Maternal Health Committee of the National Health and Medical Research Council had suggested that the preparation of national reports on maternal deaths in Australia would be facilitated if the form used for collecting data was universal throughout Australia. A preliminary draft or a form for such usage was prepared by Professor L. Cox, Adelaide, and presented to the Committee. After discussion it was agreed the form presently used in New South Wales was preferable and would continue to be used though information would be transcribed to a national form if this were brought into use.

Voluntary National Perinatal Form

So that more information on details of perinatal deaths than that available from the compulsory perinatal death form might be available on a national basis it was proposed that a form to collect such details should be introduced for use in all Australian States. The proposed form is in use in Victoria at present. The committee discussed this at length and agreed that more significant results would be achieved if, rather than looking at details of all deaths, certain categories of perinatal deaths were examined. Furthermore, this would be a relatively simple procedure as perinatal deaths are now notified throughout Australia and the introduction of another form would be obviated.

Future Needs in Facilities for Obstetrics in Sydney States Local Area

On behalf of the Division of Research and Planning and the Hospitals Commission of N.S.W., Dr J. Greenwell, Medical Superintendent at the Royal Hospital for Women, is carrying out a survey on the future needs in facilities for obstetrics in the Sydney statistical area. A preliminary report was presented to the Maternal and Perinatal Mortality Committee and after discussion it was recommended that the Division of Research and Planning be advised that:

(a) Consideration for both convenience and teaching be kept in mind.

(b) The philosophy of regionalization must consider future obstetric facilities and what effects it will have on the relations of professional and technical skills.

(c) Consideration to be given to social status and ethnic groups.

CLASSIFICATION OF MATERNAL DEATHS

In order to ascertain the correct method of classifying the deaths reported to the committee advice and guidance were sought from the chief medical officer of the World Health Organization. This correspondence is not yet finalized but it appears that the underlying cause concept should be adhered to and only those cases where death is a direct result of a complication of the pregnancy or childbirth should be classified as maternal deaths for statistical purposes. In the past some deaths in which there was pre-existing or intercurrent disease which was aggravated by the pregnancy have been included.

Hitherto deaths reported to the committee have been classified as "Maternal and Non-maternal Deaths". In other Australian States and in countries abroad the terms "Maternal Death" and "Associated Death" are used. To align the classifications in New South Wales with those elsewhere the committee recommended that the term "Non-maternal Death" be discontinued and "Associated Death" used in New South Wales in its place.

The question of classification of deaths will be referred back to the major committee in 1972 when final decisions will be made.

MATERNAL SUBCOMMITTEE

The Maternal Subcommittee, as a single unit, has met only once in 1971. However, working parties have been formed to carry out the several projects and surveys decided upon and these have met as the occasion demanded throughout the year.

Projects carried out during the year:

"Obstetric Practice in New South Wales"

This booklet has been rewritten and brought up to date with new material being included. The booklet has been completed, galley proofs finalized and is now in the hands of the Government Printer. It should be ready for distribution early in 1972.

Survey on the Incidence of Eclampsia 1959–63 and 1964–68

It was the opinion of some members of the committee that the incidence of eclampsia in New South Wales was increasing. In order to prove this a survey was carried out to ascertain the total number of cases of eclampsia in the two 5-year periods 1959 to 1963 and 1964 to 1968.

This survey has now been completed. The final figures are shown in the following table.

TABLE 8—INCIDENCE OF ECLAMPSIA IN NEW SOUTH WALES, 1959–63 AND 1964–68

Particulars	Period	
	1959–63	1964–68
Hospitals with obstetric beds	209	209
Returns	127	127
Total confinements in New South Wales	419,999	397,200
Confinements covered by the returns	260,400	247,264
*Cases of Eclampsia	172	199
†The Rate	66	80

* Excluding cases from thirty-five hospitals without records for the full period.
† The number of cases of Eclampsia per 1,000 confinements.

TABLE 9—DISTRIBUTION OF DELIVERIES IN NEW SOUTH WALES, 1969 AND 1970—STATUS OF ACCOUCHEUR

Location of Hospital	YEAR															
	1969								1970							
	Consultant	Per cent	General practitioner	Per cent	Resident staff and midwife	Per cent	Total	Per cent	Consultant	Per cent	General Practitioner	Per cent	Resident staff and midwife	Per cent	Total	Per cent
Sydney Metropolitan Area ..	16,924	33·6	11,191	22·2	22,313	44·2	50,428	100	18,530	35·5	11,098	21·3	22,500	43·2	52,128	100
Remainder of N.S.W. ..	3,696	10·4	24,479	68·6	7,512	21·0	35,687	100	3,626	10·0	24,511	67·6	8,120	22·4	36,257	100
Total	20,620	24·0	35,670	41·4	29,825	34·6	86,115	100	22,156	25·1	35,609	40·3	30,620	34·6	88,385	100

1969: Total confinements in N.S.W. = 86,149: Total confinements covered by survey = 86,115 (99·9%)

1970: Total confinements in N.S.W. = 88,448: Total confinements covered by survey = 88,385 (99·9%):

Number of Specialist Obstetricians—194

Metropolitan Area—163

Ex-metropolitan Areas— 31

Number of General Practitioner Obstetricians—1540

This shows that there was an increase of 27 cases of eclampsia in the second quintenium. Caution in drawing conclusions is necessary as only 127 of the 209 hospitals with obstetric beds are included because some hospitals had no records for the whole period and some hospitals failed to reply to the questionnaire. It is probable that there has been an increase in the number of cases of eclampsia and educational programmes will be introduced to alert the profession of the ongoing need to beware of and prevent this condition.

Retrospective Survey on Thromboembolism

This was done with a view to carrying out a prospective survey at a later date as it was felt that the number of cases of thromboembolism occurring during pregnancy and the puerperium period was increasing. This survey has now been completed and has been accepted for publication in the *Medical Journal of Australia*. The figures received showed wide variations and led to the conclusion that prospective study would yield no worthwhile results until there was more consistency in diagnosis.

Report on Maternal Deaths in New South Wales 1964–66 and 1967–69

This report has been completed and should be available early in 1972. It covers 200 deaths of which 140 were considered directly due to complications arising from pregnancy or childbirth. In the remaining, although pregnancy was or had been present it was not the primary cause of death.

Caesarean Section—Follow-up Survey 1968–69

This survey was completed and published in the *Medical Journal of Australia* on 17th April, 1971. An addendum on "Maternal Mortality in relation to Caesarean Section" was subsequently published on 14th August, 1971.

Status of Accoucheur

A survey of all hospitals with obstetric beds in New South Wales was carried out in order to ascertain the number of confinements supervised by specialist obstetricians and by general practitioner obstetricians, and also to ascertain who actually delivered the baby. The results of this survey are shown in table 9.

LIST OF GENERAL PRACTITIONER OBSTETRICIANS

As no such list exists it was decided to compile one in order that booklets, pamphlets, etc., printed on obstetric topics might be sent to only those directly concerned rather than to all doctors in New South Wales as the material is of little interest to those general practitioners not engaged in obstetric practice. Furthermore, less copies would be required and unnecessary expenditure would thereby be avoided.

The draft list has been completed and contains approximately 1,200 names. The names on this draft list are being checked and when finalized will be printed and distributed to those concerned. It is anticipated that the list will have to be reviewed periodically in order to keep it up to date.

SURVEY OF GRADUATES IN MEDICINE IN THE UNIVERSITY OF SYDNEY 1961 to 1965

In an effort to gauge the obstetric requirements for undergraduate and postgraduate training in future years it was decided to ascertain the number of medical graduates in medicine in the University of Sydney in the period of 1961 to 1965 who entered general practice and are engaged in the practice of obstetrics. The results of this survey are shown in table 10.

TABLE 10—GENERAL PRACTITIONER OBSTETRICIANS GRADUATING IN THE UNIVERSITY OF SYDNEY 1961 TO 1965—NUMBER OF CONFINEMENTS SUPERVISED ANNUALLY

Year of Graduation	Medical Graduates	General Practitioner Obstetricians					
		Number of confinements					
		Less than 20	20–50	50–100	100 or more	Total	Percentage
1961	197	10	7	7	1	25	12·7
1962	199	3	10	4	2	19	9·5
1963	242	5	8	8	3	24	9·9
1964	277	3	8	7	1	19	6·9
1965	311	10	13	5	1	29	9·3
1961-65	1,226	31	46	31	8	116	9·5

This indicates that of the 1,226 graduates in medicine at the University of Sydney during the 5 years under consideration, less than 10 per cent are engaged in general practice and undertaking obstetrics.

RELATIONSHIP OF ANTENATAL CARE TO PERINATAL DEATHS

A pilot survey revealed that the number of perinatal deaths in "unbooked" patients was five times higher than in "booked" patients. It was decided to carry out a retrospective study to verify this but this had to be abandoned as it was found that the definition of a booked patient varied from hospital to hospital. Furthermore there was difficulty in obtaining information concerning private and intermediate patients.

It was then decided that a retrospective study, using the perinatal death certificate as a starting point, should be carried out. Certificates for 500 perinatal deaths were taken at random but, those relating to multiple pregnancies were omitted as such pregnancies have inherent risks unrelated to antenatal care. A questionnaire was then sent to the doctor supervising the pregnancy in each case and the antenatal care received by the respective mothers was then compared with the standard recommended by the National Health and Medical Research Council. The information received enabled the following conclusions to be drawn:

(a) Judged by the criteria—the period of first visit and the total number of attendances during pregnancy. At least 60 per cent of the women whose pregnancy ended in perinatal death, antenatal care did not reach the minimal standard. This was mainly due to the shortcomings of the patient.

(b) If a prospective study were undertaken to cover all pregnancies over a set period comparisons could be made of the outcome of pregnancies where antenatal care did and did not reach minimal standard.

(c) If it can be shown that there is a lesser perinatal mortality when antenatal care reaches the desired standard, strength will be added to a campaign aimed at encouraging greater co-operation on the part of the patient in attending for antenatal care early and regularly throughout the pregnancy.

A full report of this study will be published in the *Medical Journal of Australia* in due course.

STUDY OF RUBELLA IN EARLY PREGNANCY

An epidemic of rubella occurred in New South Wales in the spring and early summer of 1971. The epidemic was of minor proportions but during the period September to December, inclusive, seventy pregnant women were diagnosed as having rubella. A follow-up study of these women is being made and a report will be prepared in due course. Further cases are certain to occur, and conclusions cannot be drawn until all such pregnancies and the outcome in each case is known.

VISITS TO HOSPITALS WITH OBSTETRIC BEDS IN NEW SOUTH WALES

It has been the intention, from the inception of the Division, for medical officers to visit all hospitals with obstetric beds in New South Wales. The reasons for such visits are that personal contact would lead to improved co-operation from the medical, nursing and administrative staffs of such hospitals and at the same time allow the officers to gain first hand knowledge of the conditions obtaining, in addition to studying the general obstetric and paediatric facilities available at these hospitals.

During the year two such trips have been made, one to the northeast area of the State and the other to the southwest area. Altogether seventy-five hospitals were visited and much valuable information obtained. This will be utilized for recommending improvement of facilities where necessary and in planning educational programmes to promulgate the latest advances in both obstetric and paediatric fields.

OBSTETRIC CONSULTANT SERVICE

During the current calendar year 44 applications have been made for consultations. There are 127 consultants now available for this service, 5 new names being added to the list during the year. The list is made up as follows:

1. Consultants resident outside Sydney and available for local country areas—

(a) Australian Capital Territory	5
(b) Riverina Health District	3
(c) Newcastle and North Coast Health Districts	12
(d) North Western Health District	1
(e) South Coast Health District	5
(f) Western Health District	6

2. Consultants resident in the metropolitan area—

(a) Available for consultation anywhere in New South Wales	..	65
(b) Available for consultation in the metropolitan area only	.. ..	30

FREE ANAESTHETIST CONSULTANT SERVICES

No consultations were arranged in 1971. This service is available and provided when the consultant obstetrician needs the services of a skilled anaesthetist.

PERINATAL MORTALITY AND MORBIDITY

Although the Division of Maternal and Perinatal Studies was established in January, 1970, it was not able to commence its investigation and study of perinatal mortality and morbidity until the final quarter of the year. The perinatal subcommittee had met only once in 1970; the meeting having been held in October. The two co-opted neonatal paediatricians along with the basic representatives of the Maternal and Perinatal Mortality Committee and a representative of the Bureau of Census and Statistics attended. This was essentially an introductory meeting, as the concept of perinatal medicine was new and guidelines were required indicating what facets of the problem should first be attacked. No positive constructive action resulted from this first meeting.

The first decision of 1971 was to identify the goal of perinatal medicine and set out the conditions necessary for achievement of this goal. This is a complex field involving a number of medical and paramedical disciplines and teamwork must be the foundation of any successful plan of action to reduce mortality and morbidity. The clinical knowledge and skills of both obstetrician and paediatrician must be integrated and the supportive services of midwives would be essential for any advance. In the past attention had been focused on salvaging infant life but this is no longer sufficient. Survival is not always attractive and in the future, attention must be focused on the quality of the survivor. Thus the goal became the prevention of death in this period and the minimizing of mental and physical defect in the survivor, so that each individual live-born infant might have the opportunity to develop to the maximum of its genetic potential and in so doing become a healthy, happy and productive member of the community.

The obstetrician would retain ultimate responsibility for the management of pregnancy, labour and delivery of the baby. The distinctive competency of the neonatal paediatrician is demonstrated in his capacity to advise on the optimum time for delivery of the foetus and to care for the infant during late pregnancy, labour and the first few weeks of life. Obstetric-paediatric consultation must become routine in obstetric management, where the foetus and newborn is at risk. Further research and practice have indicated that a valuable contribution to discussion and management of some perinatal problems in the labour ward can be made by the anaesthetist with his special interest in the physiology of respiration.

Research into, and concentration on the intrinsic problems of the perinatal period are a recent concept and the past decade has seen many changes in diagnostic and therapeutic approaches, and in the delivery of care, to the unborn foetus and the sick new-born infant.

In attempting to reduce perinatal mortality and morbidity to the disciplines of the obstetrician, the neonatal paediatrician and the anaesthetist, there must now be added the important advisory role of the geneticist. The introduction of prenatal diagnosis of many genetic disorders and the probability that the list of such disorders will increase, is the most important advance so far attained in the prevention of the births of infants with irreparable genetic mental defect and fatal genetic disease. These diseases may be caused by chromosomal aberration, by sex-linked disorders, metabolic, endocrine and miscellaneous other disorders associated with genetic abnormalities. This has opened the door to a new era in genetic counselling and highlights issues for ethical and social consideration.

In addition to these medical disciplines, it is stressed that increasing recognition must be accorded to the vital role of the nurse in the delivery room during labour, especially in "at risk" pregnancies and in giving special and intensive care to the new-born in the nurseries. Special post-graduate training will be necessary for both of these specialist sectors of the nursing profession. Neonatal paediatricians as well as obstetricians will need to be involved in the training programme of midwives. Medical undergraduates must receive an adequate education in reproductive and perinatal medicine, with integrated courses conducted by teachers in obstetrics and paediatrics. Paediatricians should take an active part in the post-graduate education of the obstetrician to ensure that neonatal paediatrics receives adequate attention and conversely the post-graduate education of the paediatrician should include a period of attachment to a major obstetric unit.

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The specific contribution of the obstetrician to the goal of intact survival for the infant will involve:

(i) Arranging for genetic counselling in selected cases preferably in the preconceptional period but if not, at least early in pregnancy.

(ii) Effective family planning.

(iii) Early detection of the high risk factors to both mother and infant.

(iv) Prenatal evaluation, expert care and intensive observation during labour and delivery.

(v) Arranging for delivery of the "at risk" foetus in a well-equipped well-staffed obstetric unit.

(vi) Early detection and management of foetal distress in close liaison with the neonatal paediatrician.

The specific contribution of the neonatal paediatrician will involve:

(i) Consultation and liaison with the obstetrician in late pregnancy and the delivery room.

(ii) Attendance at the birth of all "at risk" infants including simple and complicated deliveries and at Caesarean sections.

(iii) Resuscitation of the new-born, maintenance of respiration and intensive care of respiratory distress.

(iv) Investigation and management of jaundice in the new-born, hypoglycaemia and other neonatal disorders.

(v) Management of infants with birth injury, haemorrhage and infection.

(vi) Management of feeding problems.

Special and intensive care for the foetus and new-born infant must emphasize and will ultimately be judged on better non-fatal outcomes for stressed infants, protection against damage to the infant's inherent potential to thrive and develop, avoidance of the creation of living monuments to lapses in the quality of perinatal care and recognition that factors responsible for perinatal mortality, may, if present in sublethal degree, result in permanent mental and physical disability. Special care must aim at a better quality intact human being.

COMPULSORY PERINATAL DEATH CERTIFICATE

The compulsory perinatal death certificate became law on 1st January, 1969, with an amendment to the Registration of Births, Deaths and Marriages Act. The definition of a stillborn child was altered so that any infant attaining 20 weeks gestation or born with a birth weight of 400 gms or more and dies, requires to be registered as a perinatal death. Previously 28 weeks gestation had been the lower limit. In 1972 this definition will be common to all Australian States, making Australia the first country in the world with a common perinatal death certificate based on the same definitions. With these modifications the perinatal mortality rate which had been falling steadily until 1968, has shown a considerable rise, which is only apparent and not real because of the lowering from 28 to 20 weeks gestation. *See* table 11.

TABLE 11—N.S.W. PERINATAL MORTALITY, NUMBERS AND RATES, 1961–1970

Year	Stillbirths		Neonatal Deaths		Perinatal Deaths	
	Number	Rate	Number	Rate	Number	Rate
1961	1,306	14·89	1,284	14·86	2,590	29·53
1962	1,099	12·70	1,321	15·46	2,420	27·96
1963	1,165	13·67	1,185	14·10	2,350	27·57
1964	1,003	12·30	1,152	14·31	2,155	26·43
1965	947	11·98	1,087	13·92	2,034	25·74
1966	964	12·25	1,085	13·95	2,049	26·03
1967	863	10·83	1,058	13·42	1,921	24·10
1968	806	9·77	1,123	13·75	1,929	23·38
1969	1,080	12.40	1,235	14·35	2,315	26·57
1970	1,154	12·88	1,309	14·80	2,463	27·49
1971	1,182	11·86	1,260	12·80	2,442	24·51

Underlining the importance of—(i) obstetric-paediatric integration in the labour ward, (ii) close observation and foetal monitoring during labour, and (iii) skilled medical and nursing care for the newborn infant, is the observation that almost 50 per cent of all perinatal deaths in New South Wales between 1967–70 occurred during the period from the onset of labour to the end of the first 24 hours following delivery. *See* table 12.

COUNTRY VISITS

During the year, medical officers of the Division visited:

(a) Thirty-six hospitals with obstetric beds in the Gosford, Newcastle, Northern Tablelands and North Coast areas between 5th–16th July, 1971.

(b) Thirty-nine hospitals with obstetric beds in the Southern Tablelands, South and Central Western Slopes and Riverina areas between 11th–22nd October, 1971.

The aim of the visits was to acquaint the hospitals with the work of this Division and to gather information on the obstetric and nursing facilities available, equipment for and practice in resuscitation of the newborn, routine for feeding the babies and obstetric and perinatal statistics. Reports were made on these visits and each hospital visited during the surveys will receive a copy. Interesting and valuable information was gathered and useful contacts were established.

The achievement of the Division's long term aims, its investigations and its studies will be assisted by developing a harmonious relationship with the executive and staff of all hospitals with obstetric beds in New South Wales. With this in mind, it is the policy of this Division to visit all such hospitals as soon as possible and to maintain liaison by despatch of publications and recommendations relating to perinatal problems and by giving advice and assistance with problems.

PERINATAL SUBCOMMITTEE

There were three meetings of the perinatal subcommittee during 1971—in March, May, and October, supplemented by meetings of working parties on Resuscitation of the Newborn, Hyperbilirubinaemia and Hypoglycaemia and two meetings of the subcommittee on Prenatal Genetic Diagnosis in June and August.

The main areas of foetal and neonatal care in which the subcommittee deliberated and planned during 1971 were:

Resuscitation of the new-born;

Hyperbilirubinaemia;

Hypoglycaemia and small-for-dates babies;

Low birth weight and notification of birth weight;

Vitamin K_1;

Prenatal genetic diagnosis;

Special and intensive care nurseries for the newborn;

Obstetric-paediatric integration in the major obstetric teaching hospitals;

"At risk" pregnancies—the social and economic needs of exnuptial mothers, prenatally and postnatally;

Syllabus for midwives;

Informing the profession concerning recent developments in obstetric and neonatal paediatric care;

Survey of antenatal care;

Transfer of babies needing intensive care.

RESUSCITATION OF THE NEW-BORN

The subcommittee needed details of the situation obtaining in all obstetric hospitals in New South Wales, in reference to their facilities and equipment, their basic staffing, the present management of neonatal problems and who among the staff were capable of managing respiratory emergencies. The two country surveys mentioned above were the start of this data collection and there remains large areas to be visited and it is anticipated these will be covered during 1972.

Two hospitals in the metropolitan area in Sydney were visited, one peripheral and one central, to obtain information regarding their facilities for obstetric care and delivery, nursery equipment and the management of new-born babies requiring resuscitation. This information was used as a basis for discussion on what were the basic present-day requirements for adequate management of stressed new-born infants, in terms of facilities, equipment and staff.

The subcommittee submitted to the Maternal and Perinatal Mortality Committee a recommendation which was accepted, that each hospital should have a copy of *Resuscitation of the New-born* 2nd edition, edited by Abramson. Because of the expense involved consideration was given to an alternative. It is therefore planned for the Division to produce a booklet on *Care of the New-born*, which will include a statement on resuscitation of the new-born and which can be kept up to date as new techniques in managing this problem are found. 10 per cent of the perinatal deaths in 1960–70 were recorded as being due solely to respiratory disturbances, but many of the deaths classified to conditions of the placenta and of the umbilical cord, premature rupture of the membranes, preeclampsia, maternal illness, difficult labour and prematurity are in fact probably due to ineffective resuscitation and maintenance of respiration. The ability to resuscitate and maintain adequate respiration is a major challenge in the reduction of perinatal mortality and morbidity.

HYPERBILIRUBINAEMIA

A statement on the present management of hyperbilirubinaemia with reference to several recent methods of treatment has been prepared for distribution to the practising profession. This is an involved subject and the final statement was the result of many modifications of the original material presented. Haemolytic disease of the new-born due to Rhesus iso-immunization is the major cause of hyperbilirubinaemia and of death and disability from this condition. Nevertheless, the incidence of death and morbidity should be capable of reduction by prophylactic and therapeutic measures. There were 304 deaths in the 1967–70 period from haemolytic disease of the new-born, about 3·5 per cent of the total perinatal deaths in these 4 years. Apart from those that die, evidence suggests that raised bilirubin levels in the new-born can lead to impaired cognitive function in school children and if this is so then early control of bilirubin levels becomes essential.

HYPOGLYCAEMIA AND THE SMALL-FOR-DATES BABIES

A statement has been prepared for distribution on the recognition and management of neonatal hypoglycaemia. A large number of these cases will occur in small-for-dates babies and recognition of this category is necessary. Some difficulty was experienced in arriving at a satisfactory definition of this condition in which the symptoms are not specific and the signs difficult to recognize in some of the less serious cases. More sensitive reagents for quickly assessing glucose levels in the Blood of new-born infants are now available. A routine of investigation and treatment has been evolved and is contained in our statement. If unrecognized and untreated this condition can lead to mental retardation. Early administration of glucose is essential to stop this development.

LOW BIRTH WEIGHT

The single major factor in perinatal deaths is low birth-weight. Babies of low birth-weight are associated with maternal illness, infection and injury, toxaemias of pregnancy, early onset of labour from incompetent cervix or premature rupture of the membranes, multiple pregnancy, placenta praevia and accidental antepartum haemorrhage and placental insufficiency. Many of these conditions are the result of disorders of pregnancy, the aetiology of which is not as yet well-understood. Adverse socioeconomic conditions, poor family planning, lack of education, lack of co-operation and smoking are the major factors involved. Low birth-weight is a major challenge in perinatal medicine.

Babies requiring special and intensive care include low birth-weight babies—estimated at 7·5 per cent of births; haemolytic disease of the new-born due to Rh or AB0 incompatibility; congenital defects; short gestation but more than 2,500 Cm.; birth asphyxia; birth injury, cerebral oedema, cerebral irritation, convulsions; hypoglycaemia; respiratory difficulties; perinatal infection; haemorrhagic disease; jaundice; meconium aspiration; feeding and management problems after Caesarean section, forceps or breech deliveries; exnuptial births.

These special and intensive care units will require increased staff allocation of suitably trained doctors and nurses. It is considered that their optimum size is between twenty-four and fifty cots. The nurseries must be well-designed, amply serviced with heat regulation, ease of cleaning and disinfecting and with simple and reliable methods of communication. Full laboratory service must be available on a 24-hourly basis. Ideally other requirements include sufficient ancillary and storage rooms, conference room, treatment room, changing rooms for nurses and doctors, offices for sister and doctors, central sterilizing supply depot supplies and accommodation for resident mothers.

There must be detailed knowledge of the number of women of childbearing age in the total population and the future trends. Crude birthrate and demographic characteristics of the birthrate must be determined and detailed information of perinatal mortality and morbidity at all levels must be available. The location of and facilities available at obstetric units and attached nurseries already existing should be known and assessment made of the maximum use to which these units can be used and the optimal coverage which can be given. Only when all these factors are known can predictions and recommendations be made for the provision of adequate facilities for the care of the new-born.

Table 12—Perinatal Deaths, 1967–70

Time of cessation of heart beat in Foetus and Neonate showing number and proportion of stillbirths and neonatal deaths occurring in the period between onset of labour to the end of the first 24 hours after delivery

Year	Before labour commenced	During labour	AFTER DELIVERY				Total during labour and during first day after delivery	Percent of total perinatal deaths occurring in period	Deaths 1 to 6 days after delivery	Deaths 1 to 3 weeks after delivery	Total perinatal deaths
			During first hour	1 to 11 hours after delivery	12 to 23 Hours after delivery	Total first day					
1967	511	311	99*	350	142	591*	902	47·0	398	110	1,921
1968	482	324	79	397	153	629	953	49·4	406	88	1,929
1969	663	417	132	410	148	690	1,107	47·8	431	114	2,315
1970	674	480	154	444	173	771	1,251	50·8	433	105	2,463
1967-68	993	635	178*	747	295	1,220*	1,855	48·2	804	198	3,850
% of total perinatal deaths	25·8%							48·2	20·9	5·1	100·0
1969-70	1,337	897	286	854	321	1,461	2,358	49·4	864	219	4,778
% of total perinatal deaths	28%							49·4	18·1	4·6	100·0

*Includes 41 deaths which until 1967 were listed as stillbirths as they did not breathe.

The number of births under 2,500 gms in New South Wales was always in the region of 56 per cent of the total perinatal deaths. With the introduction of the new definition in 1969 this percentage increased because of the inclusion of babies between 20 and 28 weeks gestation, resulting in a figure of 65·8 per cent. Details are shown in table 13.

TABLE 13—PERINATAL DEATHS, N.S.W., 1967–70—LOW BIRTH-WEIGHT INFANTS

Year	Less than 1000gm	Per-centage of total Deaths	Less than 1500gm	Per-centage of total Deaths	Less than 2500gm	Per-centage of total Deaths	Total Perinatal Deaths
1967	284	14·8	591	30·7	1,069	55·6	1,921
1968	327	16·9	649	33·6	1,101	57·3	1,929
New definitions introduced 1st January, 1969							
1969	606	26·2	969	41·9	1,485	64·1	2,315
1970	674	27·4	1,076	43·7	1,620	65·8	2,463

Although low birth-weight births have been estimated variously at between 6–8 per cent, there is no reliable figure available on an annual number or rate in this State. An approach has been made to the Registrar General requesting that the baby's birth-weight be recorded on the birth certificate. It has been suggested that each mother be given a card on discharge from hospital which will incorporate details of the baby's birth including the birth-weight in avoirdupois and metric systems so that this can be entered on the certificate of birth. Details of weight distribution in live-born infants would then be available and the deaths could be rated against live-born.

VITAMIN K_1

The perinatal subcommittee reported to the Maternal and Perinatal Mortality Committee that it favoured the routine administration of vitamin K_1 to all neonates. The major Committee supported this action and made a recommendation to the Hospitals Commission which duly advised all hospitals with obstetric beds in New South Wales to administer vitamin K_1, either orally or parenterally, to all live-born infants. In the 1967–70 period, fifty-seven perinatal deaths were recorded as due to haemorrhagic disease of the new-born, or 0·66 per cent of all perinatal deaths. A follow-up of the effectiveness of this scheme will be done and if successful the figure should be reduced.

PRENATAL GENETIC DIAGNOSIS

The subcommittee on Prenatal Genetic Diagnosis first met in June, 1971; there was a second meeting in August, 1971, after which a report was accepted by the major committee in the following form:

Policy

An advisory panel consisting of an obstetrician and specialists in the field of human genetics should be set-up and its function would be to advise the members of the medical profession on all matters relating to prenatal genetic diagnosis and provide a diagnostic service. All doctors practising in New South Wales to be informed.

When possible patients should be referred before a pregnancy is embarked upon, but pregnancy should not preclude referral. Reasons for referral should be: A history of a previous child with an abnormality capable of being diagnosed in the prenatal period and/or a family history of such a congenital abnormality, or recurring abortion.

The patient and her husband must be cognisant of the possible results. Responsibility for action must rest primarily with the patient and her husband after discussion with the medical attendant.

Formal endorsement be made for a laboratory for cytological diagnosis to be set up at two hospitals in New South Wales. Liaison is to be maintained with similar laboratories and other laboratories engaged in prenatal diagnosis in this and other Australian States, and other countries to obtain information on established routine, facilities available and recent advances.

Procedure

Stress would be placed on relieving anxiety and a patient for investigation must be referred by the usual medical attendant to the advisory panel. After referral, both parents will be interviewed and investigated by one member of the panel. Results obtained to be forwarded to the referring doctor with advice on whether or not prenatal diagnosis is possible, further steps to be taken and the type of genetic counselling given or to be given by the member of the advisory panel or one of his team.

Action Taken

The members of the panel were named and the panel was granted the power to co-opt as necessary.

The Hospitals Commission was informed and asked to endorse the panel and the concept of only two laboratories. These were to be the laboratories already engaged in the work at Royal Alexandra Hospital for Children and Prince of Wales Hospital.

All doctors in New South Wales are to be informed of the existence of the panel and the reasons for its establishment, the facilities available and the routines to be adopted.

Foetal Calf Serum

High-quality serum is essential for successful culture of foetal cells. It is paramount to ensure that sufficient quantities are readily available, specially with increasing demands. Investigations are to be made into the source, supply and standard of serum.

SPECIAL AND INTENSIVE CARE NURSERIES

In the provision of special care and intensive care for the stressed new-born many factors need to be taken into account. In New South Wales, two types of special care units may be visualized.

(i) Special care units attached to hospitals in a number of country towns and at selected peripheral metropolitan areas and a major obstetric hospital.

(ii) Intensive care units, two or three within the State, attached to a hospital in a university setting and providing opportunities for research into new techniques and acting as a source of advice to all those concerned with the special care of babies. Here staff will obtain the kind of experience needed for this highly specialized work. Intensive care units would look after a small number of babies whose healthy survival depends on highly specialized techniques including the use of monitoring equipment and mechanical ventilation.

APPENDIX I—PERINATAL MORTALITY IN LOCAL GOVERNMENT AREAS IN SYDNEY STATISTICAL DIVISION, 1967–70

Local Government Area	1967		1968		1969		1970	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Ashfield M.	17	19·79	18	20·20	25	26·60	27	27·89
Auburn M.	22	27·09	19	25·30	25	30·53	33	37·50
Bankstown M.	64	23·51	69	24·48	66	23·45	73	23·42
Baulkham Hills S.	14	15·38	11	11·33	21	16·94	29	20·19
*Blacktown M.	72	26·53	79	25·44	126	36·55	106	28·58
*Blue Mountains City M.	5	15·67	12	33·90	8	21·56	12	29·93
Botany M.	15	23·81	20	26·67	23	30·34	22	28·46
Burwood M.	7	15·02	11	23·61	15	30·86	14	29·35
Camden M.	3	16·04	4	22·10	1	4·65	10	40·98
Campbelltown City M.	8	13·16	21	33·65	23	30·00	19	24·58
Canterbury M.	42	21·09	42	19·69	52	21·80	49	19·67
Concord M.	5	13·37	13	33·94	9	23·26	9	19·70
Drummoyne M.	12	26·09	8	17·13	16	32·26	13	24·30
Fairfield M.	52	22·83	54	23·76	62	24·97	78	31·34
Holroyd M.	26	18·31	35	23·71	52	30·90	49	26·12
Hornsby S.	38	22·65	34	18·62	54	28·44	37	19·79
Hunters Hill M.	4	22·86	4	23·39	6	33·71	3	19·87
Hurstville M.	22	23·18	26	23·53	29	27·86	24	21·54
Kogarah M.	17	27·82	14	20·99	14	20·93	17	24·50
Ku-ring-gai M.	23	18·93	24	17·60	27	19·30	36	24·36
Lane Cove M.	4	11·70	4	11·33	11	28·65	8	18·65
Leichhardt M.	32	27·28	32	20·47	49	31·57	49	31·84
Liverpool City M.	33	19·70	37	22·45	46	27·28	53	29·68
Manly M.	15	34·03	9	18·67	18	34·22	20	35·84
Marrickville M.	57	28·86	44	18·05	68	26·45	117	43·95
Mosman M.	10	23·70	10	25·51	14	31·39	11	25·29
North Sydney M.	19	26·76	12	16·51	15	19·51	24	31·01
Parramatta City M.	39	22·03	34	19·46	52	26·96	45	22·85
Penrith City M.	27	23·66	29	24·39	31	24·37	31	21·39
Randwick M.	49	28·27	45	24·85	57	28·64	52	25·87
Rockdale M.	41	35·13	19	16·81	35	27·26	33	25·38
Ryde M.	27	20·44	23	18·52	41	27·89	40	27·84
South Sydney M.	..	..	27	29·16	25	26·57	28	30·43
Strathfield M.	6	17·00	12	35·93	13	34·03	10	25·25
Sutherland S.	43	15·68	66	23·16	60	19·99	57	18·99
Sydney City M.	89	28·45	52	47·79	54	49·67	35	34·55
Warringah S.	61	23·08	66	21·79	68	21·26	78	22·96
Waverley M.	16	17·68	22	22·63	30	30·52	32	29·80
Willoughby M.	12	17·42	5	7·03	18	24·49	24	29·02
Windsor M.	10	33·90	9	31·58	8	24·24	7	20·17
Woollahra M.	7	15·66	17	22·66	26	32·18	24	31·62
Total	1,065		1,092		1,393		1,438	

APPENDIX II—PERINATAL DEATHS, N.S.W., 1967–70, BY STATISTICAL DIVISION AND SUB-DIVISION

Statistical Division and Sub-Division	1967		1968		1969		1970	
	Number	Rate*	Number	Rate*	Number	Rate*	Number	Rate*
Sydney S.D.	1,065	22·93	1,092	23·02	1,393	26·88	1,438	26·62
Outer Sydney S.D.	49	29·93	39	21·78	45	24·08	60	28·61
Newcastle	159	25·79	139	21·89	172	25·35	166	24·39
Balance of Hunter	20	20·37	31	30·19	29	25·64	32	28·85
Hunter S.D.	179	25·06	170	23·05	201	25·40	198	25·02
Wollongong	94	27·20	87	24·22	100	26·71	110	27·99
Balance of Illawarra	25	30·79	32	36·00	31	33·99	24	26·43
Illawarra S.D.	119	27·88	119	26·56	131	28·14	134	27·69
Richmond Tweed	34	20·57	41	24·71	31	17·95	51	30·20
Clarence	32	30·25	25	22·69	37	32·88	34	29·90
Hastings	32	28·34	38	33·69	31	26·52	49	42·24
North Coast S.D.	98	25·52	104	26·74	99	24·62	134	33·62
Northern Tablelands	30	25·71	32	26·21	28	23·14	37	29·91
Northern Slopes	30	22·39	37	24·12	43	29·07	50	34·51
North Central Plain	20	25·81	25	32·09	25	30·23	28	34·74
Northern S.D.	80	24·22	94	26·60	96	27·30	115	32·93
Central Macquarie	36	25·79	37	25·82	49	33·02	53	36·91
Macquarie-Barwon	16	29·00	22	39·08	23	42·23	15	26·60
Upper Darling	13	35·23	11	32·54	14	38·15	6	15·58
North Western S.D.	65	28·92	70	29·99	86	35·86	74	31·03
Central Tablelands	44	27·43	48	29·07	40	23·36	47	28·35
Lachlan	48	31·85	31	21·57	41	27·68	41	28·12
Central West S.D.	92	29·57	79	25·58	81	25·37	88	28·24
Lower South Coast	12	32·52	8	19·20	13	29·55	14	32·79
Snowy	5	11·57	3	7·23	8	20·11	8	21·00
Southern Tablelands	33	21·41	29	18·97	33	21·09	53	32·31
South-Eastern S.D.	50	21·35	40	17·06	54	22·47	75	30·64
Central Murrumbidgee	44	22·20	44	22·54	50	25·84	55	28·23
Lower Murrumbidgee	29	29·06	20	21·86	24	25·92	30	30·39
Murrumbidgee S.D.	73	24·50	64	22·32	74	25·87	85	28·96
Upper Murray	28	24·18	27	23·46	38	30·69	38	33·33
Central Murray	11	24·83	7	14·61	6	13·48	8	17·43
Murray-Darling	2	33·33	2	32·26	1	16·67	3	66·67
Murray S.D.	41	24·68	36	21·28	45	25·82	49	29·81
Far West S.D.	10	15·22	22	32·16	10	13·97	13	17·79
Total N.S.W. per 1000 Births ..	1,921	24·10	1,929	23·38	2,315	26·57	2,463	27·49

APPENDIX III—1967–1970—N.S.W.—VITAL STATISTICS AND PERINATAL AND INFANT MORTALITY RATES IN LOCAL GOVERNMENT AREAS GROUPS IN SYDNEY STATISTICAL DIVISION

Group of Local Government Areas in Sydney Statistical Division	Year	Population	Live births		Stillbirths		Neonatal deaths		Perinatal deaths		Early neonatal deaths		Infant deaths		Post-neonatal deaths	
			Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
SYDNEY	1967	326,400	6,842	20·96	63	9·12	130	19·00	193	27·95	117	17·10	168	24·55	38	5·55
SOUTH SYDNEY	1968	314,930	6,696	21·26	68	10·05	107	15·98	175	25·87	96	14·34	146	21·80	39	5·82
BOTANY	1969	310,850	6,801	21·88	108	15·63	111	16·32	219	31·70	95	13·97	141	20·73	30	4·41
LEICHHARDT	1970	310,950	6,775	21·79	132	19·11	119	17·56	251	36·34	107	15·80	157	23·17	38	5·61
MARRICKVILLE																
ASHFIELD	1967	158,550	2,488	15·69	24	9·55	23	9·24	47	18·71	22	8·84	30	12·06	7	2·82
BURWOOD	1968	158,940	2,514	15·82	25	9·85	35	13·92	60	23·63	35	13·92	50	19·89	15	5·97
CONCORD	1969	159,780	2,651	16·59	36	13·40	42	15·84	78	29·03	38	14·33	50	18·86	8	3·02
DRUMMOYNE	1970	160,980	2,804	17·42	29	10·23	44	15·69	73	25·06	40	14·27	59	21·04	15	5·34
STRATHFIELD																
	1967	225,500	3,049	13·52	36	11·67	36	11·81	72	23·34	34	11·15	47	15·41	11	3·60
RANDWICK	1968	242,250	3,494	14·42	39	11·04	45	12·88	84	23·78	42	12·02	58	16·60	13	3·72
WAVERLEY	1969	245,550	3,730	15·19	51	13·49	62	16·62	113	29·89	57	15·28	72	19·30	10	2·68
WOOLLAHRA	1970	248,030	3,794	15·30	47	12·24	61	16·08	108	28·12	54	14·23	85	22·40	24	6·32
BANKSTOWN																
CANTERBURY	1967	612,600	10,063	16·43	119	11·69	110	10·93	229	22·49	98	9·74	152	15·10	42	4·17
HURSTVILLE	1968	620,690	10,616	17·10	90	8·41	146	13·75	236	22·04	127	11·95	184	17·33	38	3·58
KOGARAH	1969	631,010	11,064	17·53	132	10·79	124	11·21	256	22·87	111	10·03	175	15·82	51	4·61
ROCKDALE	1970	641,430	11,598	18·08	119	10·16	134	11·55	253	21·59	126	10·75	181	15·45	47	3·90
SUTHERLAND																
AUBURN	1967	398,250	7,887	19·80	68	8·55	104	13·19	172	21·62	89	11·28	149	18·89	45	5·70
FAIRFIELD	1968	411,000	7,823	19·03	73	9·25	106	13·55	179	22·67	89	11·38	143	18·28	37	4·73
HOLROYD	1969	421,950	8,481	20·10	119	13·84	118	13·91	237	27·56	110	12·97	156	18·31	38	4·40
LIVERPOOL	1970	432,900	8,880	20·51	120	13·33	138	15·54	258	28·66	126	14·19	193	21·73	55	6·19
PARRAMATTA																
HUNTERS HILL																
LANE COVE	1967	257,630	3,628	14·08	31	8·47	45	12·40	76	20·77	38	10·47	61	16·81	16	4·41
MOSMAN	1968	260,150	3,573	14·19	23	6·40	35	9·79	58	16·13	34	9·52	54	15·11	19	5·32
NORTH SYDNEY	1969	264,050	3,931	14·89	58	14·54	54	13·74	112	28·09	49	12·72	68	17·30	14	3·54
RYDE	1970	267,650	3,997	14·94	56	13·82	54	13·51	110	27·14	51	12·76	70	17·51	16	4·00
WILLOUGHBY																

APPENDIX III—1967–1970—N.S.W.—VITAL STATISTICS AND PERINATAL AND INFANT MORTALITY RATES IN LOCAL GOVERNMENT AREAS GROUPS IN SYDNEY STATISTICAL DIVISION *—continued*

Group of Local Government Areas in Sydney Statistical Division	Year	Population	Live births		Stillbirths		Neonatal deaths		Perinatal deaths		Early neonatal deaths		Infant deaths		Post-neonatal deaths	
			Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
BAULKHAM HILLS HORNSBY KU-RING-GAI MANLY WARRINGAH	1967 1968 1969 1970	378,700 397.150 417,620 441,270	6,823 7,582 8,171 8,644	18·02 19·09 19·57 19·59	65 62 92 94	9·44 8·11 11·13 10·76	86 82 96 106	12·60 10·82 11·75 12·26	151 144 188 200	21·92 18·84 22·75 22·89	79 73 83 98	11·58 9·63 10·16 11·34	120 112 122 139	17·59 14·77 14·93 16·08	34 30 26 33	4·99 3·95 3·18 3·82
BLACKTOWN BLUE MOUNTAINS CAMDEN CAMPBELLTOWN PENRITH WINDSOR	1967 1968 1969 1970	231,390 245,690 261,800 279,100	5,213 5,679 6,306 6,841	22·53 23·11 24·09 24·51	51 59 96 82	9·69 10·28 14·99 11·84	74 95 101 103	14·20 16·73 16·02 15·06	125 154 197 185	23·75 26·84 30·77 26·72	63 89 91 96	12·09 15·67 14·43 14·03	97 124 133 143	18·61 21·83 21·09 20·90	23 29 32 40	4·41 5·10 5·07 5·84
SYDNEY STATISTICAL DIVISION	1967 1968 1969 1970	2,591,720 2,146,800 2,712,610 2,780,310	45,993 47,977 51,135 53,333	17·74 18·11 18·83 19·15	457 441 685 679	9·84 9·11 13·22 12·57	608 651 708 759	13·22 13·57 13·85 14·23	1,065 1,092 1,393 1,438	22·93 23·02 26·88 26·62	540 591 638 698	11·74 12·32 12·48 13·09	824 866 922 1,028	17·92 18·05 18·03 19·28	216 215 214 269	4·70 4·45 4·18 5·05

Appendix III—1967–1970—N.S.W.—Vital Statistics, Perinatal and Infant Mortality Rates in Statistical Divisions and Subdivisions

Statistical Subdivision and Division	Year	Population	Live births		Stillbirths		Neonatal deaths		Perinatal deaths		Early neonatal deaths		Infant deaths		Post-neonatal deaths	
			Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
OUTER SYDNEY STATISTICAL DIVISION	1967	104,940	1,612	15·35	26	15·87	23	14·27	49	29·93	20	12·41	30	18·61	7	4·34
	1968	109,160	1,776	16·25	15	8·38	24	13·51	39	21·78	23	12·95	48	27·03	24	13·52
	1969	113,150	1,848	16·31	21	11·24	24	12·99	45	24·08	22	11·90	39	21·10	15	8·11
	1970	117,730	2,071	17·56	26	12·40	34	16·42	60	28·61	29	14·00	51	24·63	17	8·21
RICHMOND–TWEED	1967	94,720	1,637	17·28	16	9·68	18	11·00	34	20·57	17	10·38	27	17·28	9	6·28
	1968	94,740	1,645	17·34	14	8·44	26	15·81	40	24·11	26	15·81	29	17·63	3	1·82
	1969	94,930	1,711	18·00	16	9·26	15	8·77	31	17·95	14	8·18	17	9·94	2	1·17
	1970	95,450	1,667	17·43	22	13·03	29	17·40	51	30·20	27	16·20	34	20·40	5	3·00
CLARENCE	1967	60,340	1,039	17·21	19	17·96	13	12·51	32	30·75	12	11·55	28	26·95	15	14·44
	1968	60,300	1,092	18·09	10	9·07	15	13·74	25	22·69	15	13·74	21	19·23	6	5·49
	1969	60,620	1,113	18·34	12	10·66	25	22·46	37	32·88	24	21·56	37	33·24	12	10·78
	1970	61,280	1,121	18·26	16	14·07	18	16·06	34	29·90	18	16·06	26	23·19	8	7·13
HASTINGS	1967	57,970	1,113	19·19	16	14·17	16	14·38	32	28·34	15	13·48	20	19·19	4	4·81
	1968	58,460	1,111	18·98	17	15·07	21	18·90	38	33·69	21	18·90	30	27·00	9	8·10
	1969	58,910	1,150	19·50	19	16·25	12	10·43	31	26·52	11	9·57	17	14·78	5	4·35
	1970	59,540	1,133	18·99	27	23·28	22	19·42	49	42·24	20	17·65	24	21·18	2	1·76
NORTH COAST STATISTICAL DIVISION	1967	213,030	3,789	17·78	51	13·28	47	12·40	98	25·52	44	11·61	75	17·78	28	5·38
	1968	213,500	3,848	18·00	41	10·54	62	16·11	103	26·48	62	16·11	80	20·79	18	4·68
	1969	214,460	3,974	18·51	47	11·69	52	13·11	99	24·62	49	12·33	71	17·87	19	6·76
	1970	216,270	3,921	18·10	65	16·31	69	17·60	134	33·62	65	16·55	84	21·42	15	3·82
NORTHERN TABLELANDS	1967	58,500	1,157	19·77	10	8·57	20	17·29	30	25·71	20	17·29	27	23·34	7	6·05
	1968	58,710	1,210	20·59	11	9·01	21	17·36	32	26·21	20	16·53	28	23·14	7	5·78
	1969	59,070	1,198	20·26	12	9·92	16	13·36	28	23·14	14	11·69	20	16·69	4	3·33
	1970	59,790	1,226	20·47	11	8·89	26	21·21	37	29·91	20	16·31	40	32·63	14	11·42
NORTHERN SLOPES	1967	69,480	1,326	19·08	14	10·45	16	12·07	30	22·39	12	9·05	23	17·35	7	5·28
	1968	69,890	1,516	21·67	18	11·73	19	12·53	37	24·12	17	11·21	24	15·83	5	3·30
	1969	70,780	1,455	20·54	24	16·23	19	13·06	43	29·07	17	11·68	20	13·75	1	0·69
	1970	71,470	1,424	19·89	25	17·25	25	17·56	50	34·51	23	16·15	30	21·07	5	3·51
NORTH CENTRAL PLAIN	1967	29,530	765	25·90	10	12·90	10	13·07	20	25·81	8	10·46	15	19·61	5	6·54
	1968	30,390	774	25·44	5	6·42	20	25·84	25	32·09	19	24·55	24	31·01	4	5·17
	1969	30,730	822	26·72	5	6·05	20	24·33	25	30·23	19	23·11	23	27·98	3	3·65
	1970	31,060	792	25·46	14	17·37	14	17·67	28	34·74	14	17·67	18	22·73	4	5·06

APPENDIX III—1967–1970—N.S.W.—VITAL STATISTICS, PERINATAL AND INFANT MORTALITY RATES IN STATISTICAL DIVISIONS AND SUBDIVISIONS—*continued*

Statistical Subdivision and Division	Year	Population	Live births		Stillbirths		Neonatal deaths		Perinatal deaths		Early neonatal deaths		Infant deaths		Post-neonatal deaths	
			Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
NORTHERN STATISTICAL DIVISION	1967	157,510	3,248	20·61	34	10·36	46	14·16	80	24·22	40	12·32	65	20·01	19	5·85
	1968	158,990	3,500	21·99	34	9·62	60	17·14	94	26·60	56	16·00	76	21·71	16	4·57
	1969	160,580	3,475	21·62	41	11·66	55	15·83	96	27·30	50	14·40	69	18·13	8	2·30
	1970	162,320	3,442	21·17	50	14·32	65	18·88	115	32·93	57	16·56	88	25·57	23	6·69
NEWCASTLE DISTRICT	1967	332,660	6,099	18·33	67	10·87	92	15·00	159	25·79	83	13·61	124	20·33	32	5·33
	1968	338,920	6,287	18·53	62	9·77	77	12·25	139	21·89	75	11·93	103	16·38	26	4·13
	1969	342,950	6,715	19·56	69	10·17	103	15·34	172	25·35	94	14·00	133	19·81	30	4·47
	1970	346,970	6,727	19·35	79	11·61	87	11·45	166	24·39	80	11·89	115	17·10	28	5·65
BALANCE OF HUNTER	1967	52,740	972	18·42	10	10·18	10	10·29	20	20·37	8	8·23	13	13·37	3	3·08
	1968	53,790	1,010	18·76	17	16·55	14	13·86	31	30·19	12	11·88	15	14·85	1	0·99
	1969	54,810	1,116	20·34	15	13·26	14	12·55	29	25·64	12	10·75	18	16·13	4	3·58
	1970	54,920	1,095	19·90	14	12·62	18	16·44	32	28·85	15	13·70	24	21·92	6	5·48
HUNTER STATISTICAL DIVISION	1967	385,400	7,071	18·34	77	10·77	102	14·43	179	25·06	91	12·87	137	19·37	35	4·94
	1968	392,710	7,297	18·56	79	10·71	91	12·47	170	23·05	87	11·92	118	16·17	27	3·70
	1969	397,760	7,831	19·67	84	10·61	117	14·94	201	25·40	106	13·54	151	19·28	34	4·34
	1970	401,890	7,822	19·43	93	11·75	105	13·36	198	25·02	95	12·13	139	17·77	34	4·41
WOLLONGONG DISTRICT	1967	182,560	3,412	18·68	51	14·73	43	12·60	94	27·20	38	11·14	60	17·58	17	4·98
	1968	187,910	3,551	18·88	41	11·41	46	12·96	87	24·22	44	12·39	53	14·93	7	1·97
	1969	196,330	3,701	18·83	43	11·49	57	15·40	100	26·71	55	14·86	82	22·16	25	6·76
	1970	203,110	3,866	19·00	64	16·28	46	11·90	110	27·99	43	11·12	58	15·00	12	3·10
BALANCE OF ILLAWARRA	1967	42,950	802	18·66	10	12·32	15	18·73	25	30·79	13	16·21	18	22·44	3	3·71
	1968	44,190	878	19·85	11	12·37	21	23·92	32	36·00	21	23·92	30	34·17	9	10·25
	1969	45,410	899	19·78	13	14·25	18	20·02	31	33·99	17	18·91	20	22·25	2	2·23
	1970	46,490	898	19·28	10	11·01	14	15·59	24	26·43	12	13·36	21	23·39	7	7·80
ILLAWARRA STATISTICAL DIVISION	1967	225,510	4,214	18·68	61	14·27	58	13·76	119	27·88	51	12·10	78	18·51	20	4·75
	1968	232,100	4,429	19·07	52	11·60	67	15·13	119	26·56	65	14·68	83	18·74	16	3·61
	1969	241,740	4,600	19·01	56	12·03	75	16·30	131	28·14	72	15·65	102	22·17	27	5·87
	1970	249,600	4,764	19·05	74	15·30	60	12·57	134	27·69	55	11·54	79	16·58	19	4·81

Statistical Subdivision and Division	Year	Population	Live births		Stillbirths		Neonatal deaths		Perinatal deaths		Early neonatal deaths		Infant deaths		Post-neonatal deaths	
			Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
CENTRAL TABLELANDS	1967	83,030	1,575	18·96	29	18·08	15	9·52	44	27·43	15	9·52	25	15·87	10	6·35
	1968	83,310	1,627	19·51	24	14·54	24	14·75	48	29·07	23	14·14	37	22·74	13	7·99
	1969	83,700	1,696	20·24	16	9·35	24	14·15	40	23·36	21	12·38	31	18·28	7	4·13
	1970	84,190	1,638	19·42	20	12·06	27	16·48	47	28·35	25	15·26	36	21·98	9	5·50
LACHLAN	1967	69,250	1,484	21·42	23	15·26	25	16·85	48	31·85	24	16·17	33	22·24	8	5·39
	1968	68,750	1,425	20·70	12	8·35	19	13·33	31	21·57	17	11·93	26	18·25	7	4·92
	1969	68,620	1,466	21·34	15	10·13	26	17·74	41	27·68	22	15·01	36	24·56	10	6·82
	1970	68,530	1,445	21·05	13	8·92	28	19·38	41	28·12	25	17·30	33	22·84	5	3·46
CENTRAL WEST STATISTICAL DIVISION	1967	152,280	3,059	20·08	52	16·71	40	13·08	92	29·57	39	12·75	58	18·96	18	5·88
	1968	152,060	3,052	20·05	36	11·66	43	14·09	79	25·58	40	13·16	63	20·64	20	6·55
	1969	152,320	3,162	20·74	31	9·71	50	15·81	81	25·37	43	13·60	67	21·19	17	5·38
	1970	152,720	3,083	20·15	33	10·59	55	17·84	88	28·24	50	16·22	69	22·38	14	4·54
CENTRAL MACQUARIE	1967	63,580	1,387	21·80	9	6·45	27	19·47	36	25·79	26	18·75	32	23·07	5	3·60
	1968	63,660	1,415	22·20	18	12·56	19	13·43	37	25·82	18	12·72	24	16·96	5	3·53
	1969	63,860	1,464	22·90	20	13·48	29	19·81	49	33·02	23	15·71	38	25·96	9	6·15
	1970	64,160	1,407	21·89	29	20·19	24	17·06	53	36·91	23	16·35	30	21·32	6	4·26
MACQUARIE–BARWON	1967	21,650	546	25·21	6	10·87	10	18·32	16	29·00	10	18·32	17	31·14	7	12·82
	1968	21,570	553	25·61	10	17·76	12	23·51	22	39·08	12	23·51	22	39·78	10	16·27
	1969	21,610	536	24·78	11	20·11	12	22·39	23	42·23	11	20·52	19	35·45	7	13·06
	1970	21,790	559	25·61	5	8·87	10	17·89	15	26·60	9	16·10	15	26·83	5	8·94
UPPER DARLING	1967	13,210	359	27·16	10	27·10	3	8·36	13	35·23	2	5·57	8	22·28	5	13·92
	1968	13,110	332	25·30	6	17·75	5	15·06	11	32·54	2	6·03	11	33·13	6	18·07
	1969	13,120	360	27·42	7	19·07	7	19·44	14	38·15	7	19·44	13	36·11	6	16·67
	1970	13,270	383	28·80	2	5·19	4	10·44	6	15·58	4	10·44	10	26·11	6	15·67
NORTHWESTERN STATISTICAL DIVISION	1967	98,440	2,292	23·27	25	10·79	40	17·45	65	28·92	38	16·54	57	24·87	17	7·42
	1968	98,340	2,300	23·36	34	14·57	36	15·65	70	29·99	32	13·91	57	24·78	21	9·13
	1969	98,590	2,360	23·91	38	15·85	48	20·34	86	35·86	41	17·37	70	29·66	22	9·32
	1970	99,220	2,349	23·63	36	15·09	38	16·18	74	31·03	36	15·33	55	23·41	17	7·23

APPENDIX III—1967–1970—N.S.W.—VITAL STATISTICS, PERINATAL AND INFANT MORTALITY RATES IN STATISTICAL DIVISIONS AND SUBDIVISIONS—*continued*

Statistical Subdivision and Division	Year	Population	Live births		Stillbirths		Neonatal deaths		Perinatal deaths		Early neonatal deaths		Infant deaths		Post-neonatal deaths	
			Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
LOWER SOUTH COAST	1967	20,470	362	17·68	7	18·97	5	13·81	12	32·52	5	13·81	5	13·81	..	..
	1968	20,780	396	19·04	3	7·52	5	12·63	8	19·20	5	12·67	8	20·20	3	7·57
	1969	21,100	434	20·55	6	13·64	7	16·13	13	29·55	7	16·13	8	18·43	1	2·30
	1970	21,460	424	19·72	3	7·03	11	25·94	14	32·79	10	23·59	15	35·38	4	9·44
SNOWY	1967	19,930	429	21·51	3	6·94	2	4·66	5	11·57	1	2·33	4	9·32	2	4·66
	1968	19,220	414	21·52	2	4·81	1	2·43	3	7·23	1	2·43	3	7·25	2	4·83
	1969	18,920	396	20·91	2	5·03	6	15·15	8	20·11	6	15·15	7	17·68	1	2·53
	1970	18,570	376	20·22	5	13·12	3	7·99	8	21·00	2	5·32	4	10·64	1	2·65
SOUTHERN TABLELANDS	1967	75,110	1,525	20·30	16	10·38	17	11·15	33	21·41	16	10·49	24	15·74	7	4·59
	1968	75,430	1,517	20·09	12	7·85	17	11·21	29	18·97	14	9·23	27	17·80	10	6·59
	1969	76,420	1,549	20·25	16	10·22	17	10·33	33	21·09	16	10·33	24	15·49	7	5·16
	1970	77,120	1,612	20·86	28	17·07	25	15·51	53	32·31	25	15·51	32	19·85	7	4·34
SOUTHEASTERN STATISTICAL DIVISION	1967	115,510	2,316	20·04	26	11·10	24	10·36	50	21·35	22	9·50	33	14·25	9	3·89
	1968	115,430	2,327	20·14	17	7·25	23	9·88	40	17·06	20	8·59	38	16·33	15	6·45
	1969	116,440	2,379	20·41	24	10·00	30	12·61	54	22·47	29	12·19	39	16·39	9	3·78
	1970	117,150	2,412	20·55	36	14·71	39	16·17	75	30·64	37	15·34	51	21·14	12	4·97
FAR WEST STATISTICAL DIVISION	1967	35,680	654	18·32	3	4·57	7	10·70	10	15·22	6	9·17	10	15·29	3	4·59
	1968	35,600	673	18·88	11	16·08	11	16·34	22	32·16	10	14·86	15	22·29	4	5·95
	1969	35,540	711	19·99	5	6·98	5	7·03	10	13·97	5	7·03	13	18·28	8	11·25
	1970	35,730	727	20·31	4	5·47	9	12·28	13	17·79	9	12·28	9	12·28	..	..
CENTRAL MURRUMBIDGEE	1967	92,080	1,964	21·32	18	9·08	26	13·24	44	22·20	22	11·20	32	16·29	6	3·05
	1968	92,040	1,928	20·92	24	12·30	20	10·37	44	22·54	18	9·34	35	18·15	15	7·78
	1969	92,700	1,913	20·61	22	11·37	28	14·64	50	25·84	27	14·11	33	17·25	5	2·61
	1970	93,490	1,918	20·48	30	15·40	25	13·03	55	28·23	25	13·03	32	16·68	7	3·65
LOWER MURRUMBIDGEE	1967	39,280	985	25·06	13	13·03	16	16·24	29	29·06	15	15·23	21	21·32	5	5·08
	1968	39,910	905	22·65	10	10·93	10	11·04	20	21·86	10	11·04	14	15·47	4	4·43
	1969	40,500	917	22·62	9	9·72	15	16·36	24	25·92	13	14·18	22	23·99	7	7·63
	1970	40,980	972	23·68	15	15·20	15	15·43	30	30·39	14	14·40	18	18·52	3	3·09

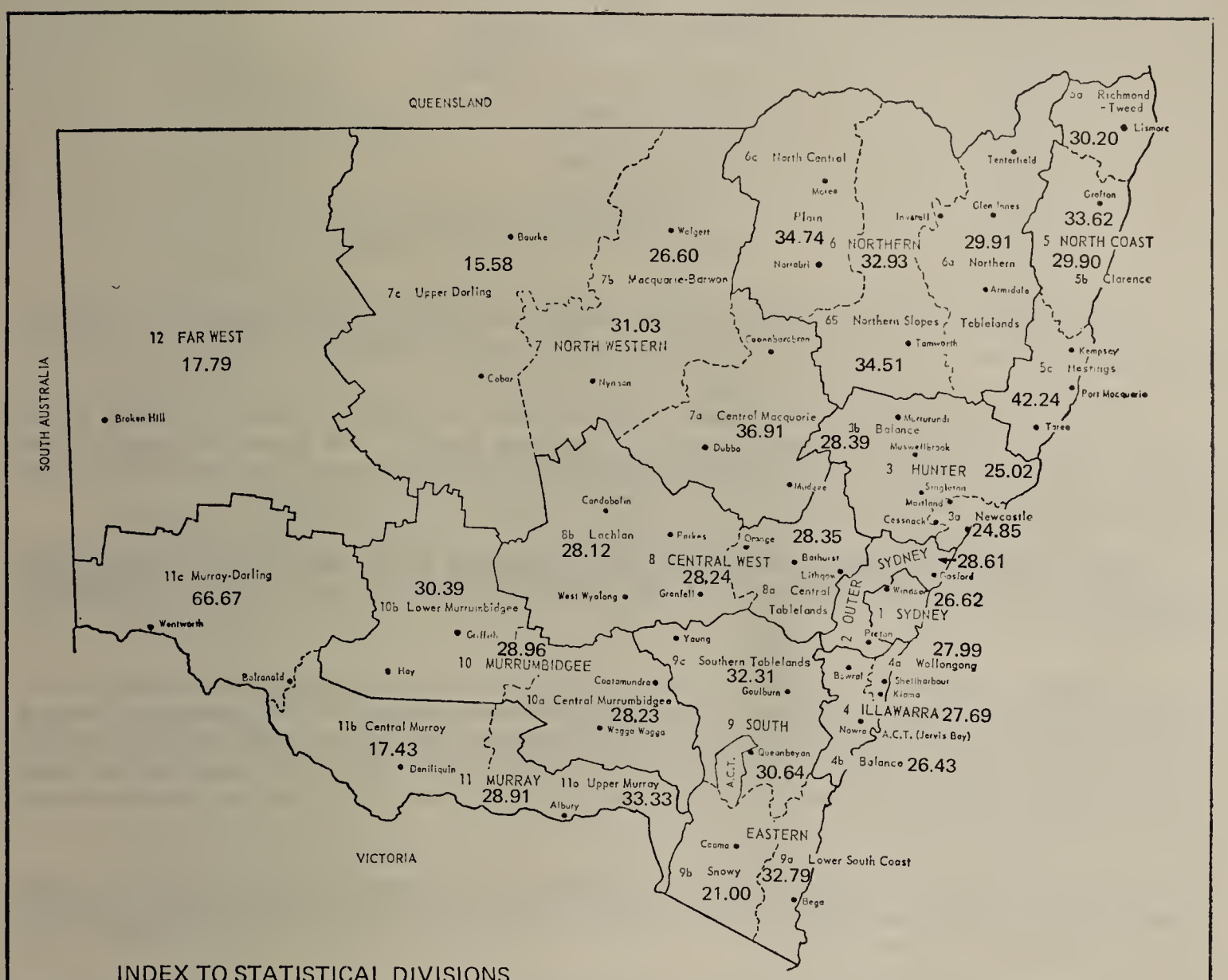
APPENDIX III—1967–1970—N.S.W.—VITAL STATISTICS, PERINATAL AND INFANT MORTALITY RATES IN STATISTICAL DIVISIONS AND SUBDIVISIONS—*continued*

Statistical Subdivision and Division	Year	Population	Live births		Stillbirths		Neonatal deaths		Perinatal deaths		Early neonatal deaths		Infant deaths		Post-neonatal deaths	
			Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
MURRUMBIDGEE STATISTICAL DIVISION	1967	131,360	2,949	22·44	31	10·40	42	14·24	73	24·50	37	12·55	53	17·97	11	3·73
	1968	131,950	2,833	21·45	34	11·86	30	10·55	64	22·32	28	9·88	49	17·30	19	6·75
	1969	133,200	2,830	21·22	31	10·84	43	15·19	74	25·87	40	14·13	55	19·43	12	4·24
	1970	134,470	2,890	21·45	45	15·33	40	13·84	85	28·96	39	13·50	50	17·30	10	3·46
UPPER MURRAY	1967	49,440	1,146	23·17	12	10·36	16	13·96	28	24·18	15	13·09	22	19·20	6	5·24
	1968	49,260	1,141	23·13	10	8·69	17	14·90	27	23·46	14	12·27	21	18·40	4	3·50
	1969	49,310	1,222	24·76	16	12·92	22	18·00	38	30·69	19	15·55	25	20·46	3	2·46
	1970	49,490	1,129	22·77	11	9·65	27	23·91	38	33·33	25	22·14	30	26·57	3	2·66
CENTRAL MURRAY	1967	27,230	436	16·01	7	15·80	4	9·18	11	24·83	4	9·18	8	18·35	4	9·18
	1968	27,610	479	17·33	..	..	7	14·61	7	14·61	7	14·61	9	18·79	2	4·18
	1969	27,960	444	15·86	1	2·25	5	11·26	6	13·48	5	11·26	5	11·26	..	..
	1970	28,200	457	16·18	2	4·36	6	13·13	8	17·43	6	13·13	7	15·32	1	2·19
MURRAY–DARLING	1967	9,420	59	6·26	1	16·67	1	16·95	2	33·33	1	16·95	2	33·90	1	16·95
	1968	9,390	60	6·38	2	32·26	..	..	2	32·26	..	..	1	16·67	1	16·67
	1969	9,360	60	6·40	..	..	1	16·67	1	16·67	1	16·67	3	50·00	2	33·33
	1970	9,380	45	4·79	..	..	3	66·67	3	66·67	3	66·67	3	66·67	..	..
MURRAY STATISTICAL DIVISION	1967	86,090	1,641	19·05	20	12·04	21	12·80	41	24·68	20	12·18	32	19·50	11	6·70
	1968	86,260	1,680	19·45	12	7·09	24	14·29	36	21·28	19	11·31	31	18·45	7	4·16
	1969	86,630	1,726	19·90	17	9·75	28	16·22	45	25·82	25	14·48	33	19·12	5	2·90
	1970	87,070	1,631	18·70	13	7·91	36	22·07	49	29·81	34	20·85	40	24·52	4	2·45
NEW SOUTH WALES EXCLUDING SYDNEY STATISTICAL DIVISION	1967	1,715,180	32,848	19·15	406	12·21	450	13·70	856	26·04	409	12·45	628	19·12	178	5·42
	1968	1,734,600	33,719	19·44	365	10·71	472	14·00	837	24·56	444	13·17	659	19·54	187	5·54
	1969	1,762,190	34,901	19·81	395	11·19	527	15·10	922	26·12	483	13·84	703	20·14	176	5·04
	1970	1,789,870	35,115	19·62	475	13·35	550	15·52	1,025	28·80	506	14·41	715	20·36	165	4·84
NEW SOUTH WALES	1967	4,306,900	78,841	18·30	863	10·83	1,058	13·42	1,921	24·10	949	12·04	1,452	18·42	394	5·00
	1968	4,381,400	81,696	18·62	806	9·77	1,123	13·75	1,929	23·38	1,035	12·67	1,525	18·67	402	4·92
	1969	4,474,800	86,036	19·21	1,080	12·40	1,235	14·35	2,315	26·57	1,121	13·03	1,625	18·89	390	4·54
	1970	4,567,000	88,448	19·33	1,154	12·88	1,309	14·80	2,463	27·49	1,204	13·61	1,743	19·71	434	4·91

PERINATAL MORTALITY—N.S.W.—INNER CITY—1970

PERINATAL MORTALITY—1970

PERINATAL MORTALITY—N.S.W.—1970



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* Statistical District

STATISTICAL DIVISIONS

AND STATISTICAL SUBDIVISIONS

OF

NEW SOUTH WALES

SCALE

Miles 100 50 0 100 200 Miles

REFERENCE

Statistical Divisions Boundaries — 12 FAR WEST

Statistical Subdivisions Boundaries — 11c Murray-Darling

DIVISION OF DENTAL SERVICES

Director: W. B. Haymet, B.D.S. (Hons.)

Location: 9–13 Young Street, Sydney

The authorized establishment for the Division for 1971 was:

44 Dental Officers, full-time.

8 Dental Officers, part-time.

41 Dental Assistants.

1 Technical Officer.

1 Clerical Assistant.

1 Typist.

Three trainees-in-dentistry pursued their studies successfully in the Faculty of Dentistry, University of Sydney. Two graduated at the end of 1971, and were appointed school dental officers.

No new staff positions were created, which resulted in officers normally involved in the examination and advisory service being required to staff new clinics. This resulted in fewer children being examined than in 1970. However, the actual treatment accomplished was higher than in any previous year. The number of extractions continued to decline proportionately.

There was also the usual complication of considerable staff changes due to resignations, marriage, etc. Messrs T. K. Dunphy and K. M. Weir, dental officers, unfortunately died suddenly during the year.

Although the primary objectives of the Division is to provide a clinical (treatment) service, several special surveys were undertaken. These included an assessment of 381 geriatric patients in a large church home, and a survey of 264 six-year-old children who had resided continuously in the Grafton-Lower Clarence Region since fluoridation commenced in 1964. The results of the latter survey confirmed previous indications in other areas of the State that a marked improvement in dental health was achieved.

The Division also assisted with the administration in a survey of dental conditions of older primary school children conducted by the Institute of Dental Research. The parent response to this 3-year project was again gratifying.

In addition to the receipt of several additional general purpose vehicles, two new mobile dental clinics were ordered to replace some which are now 11 years old. The progress in design of dental equipment was related to the specifications.

The very important dental services to the western half of the State were continued successfully through the Royal Flying Doctor Service (N.S.W. Section) based at Broken Hill, and the Western Shires Dental Service operating from Balranald and Brewarrina. The rural recession had adverse effects on the financial support of the schemes at local level.

Finance became available to remodel a number of clinics in the Government institutions. Specific reference will be made to these activities in the relevant and subsequent sections of this report.

The Dental Services Advisory Committee held regular meetings throughout 1971, and a draft of the final report was prepared at the end of the year. Routine lectures were continued in the schools, to Inservice Training courses, and at the Nurses College.

A mobile dental clinic visited the University of New South Wales campus when 606 students were examined.

A comprehensive brief was completed for the proposed Training School for Dental Nurses at Westmead. The initial plans have also been prepared. Unfortunately no finance has yet been made available.

Continuous liaison was maintained with the Education, Child Welfare and Police Departments, the Dental Health Education and Research Foundation and the Australian Dental Association both State and Federal. Forensic investigations were made on a number of occasions.

The possibility of distributing fluoride tablets to children in non-fluoridated areas of New South Wales was assessed. Finance has been requested to proceed with this project.

The decentralization of dental services continued successfully in the Newcastle and Western Metropolitan Health Districts, and dictates the pattern of future development. The opportunity was taken to completely reorganize the district programmes for the School Dental Service to conform to the new regions. This involved checking and reallocating some 3,000 departmental and non-departmental schools. The card index system was then amended to conform to this arrangement.

Several overseas visitors, mainly from the developing countries, were received throughout the year.

The total achievement of the Division in 1971 (including the decentralized districts) was, as under:

Examinations	100,243
Notifications	19,359
New Patients	28,662
Total Appointments	109,028
Extractions	38,753
Fillings	99,013
Other Treatments, including Prophylaxis	113.024
General Anaesthetics	390
Dentures	1,301
Denture Repairs	599
Orthodontic Appliances	386

Dental officers examined 3,427 children prior to treatment being commenced by dental nurses.

SCHOOL DENTAL SERVICE

A modern dental clinic was included in the Queenscliff Health Centre, which was officially opened in November, 1971. The remaining established clinics functioned satisfactorily at Naremburn, Hurstville, Parramatta, Mt Druitt, Green Valley, Tamworth, Wollongong, Newcastle, and Orange. Modifications to the buildings at Naremburn, Newcastle, Orange, and Parramatta were requested of the Public Works Department.

Most of the nineteen mobile clinics operated continuously throughout the year. Some of these have operated for 11 years, and two new replacements are being constructed. The remainder will be progressively replaced as circumstances and finances permit. The clinics concentrated on areas on the North Coast, the Northern Tablelands, at Maitland, Gilgandra, Nyngan, Goulburn, and the near South Coast. A programme has been prepared for the southwestern areas in 1972.

Finance was made available for a new school clinic at Goulburn Public School. This will be completed in August, 1972, and will be a prototype for future school clinics. The feature will be construction in Sydney and easy erection on any site. The most modern equipment will be included, and air-conditioning will be utilized where necessary.

A pilot "Brush-In" programme was conducted at the Mt Druitt school. There is ample evidence that the use of stannous fluoride toothpastes by children under supervision in the school situation lessens the incidence of dental decay.

General anaesthetic services to subnormal children were provided on a regular basis at the Adamstown, Newcastle, Clinic, and at Marsden and Grosvenor Hospitals.

A total of 370 schools were visited by the School Dental Service during the year under review. Of 44,629 infants and primary school children examined 42·8 per cent were notified of serious dental defects. Only 22·6 per cent had naturally healthy teeth. It was obvious that the younger children who had lived in Sydney continuously, had benefited from fluoridation. A high incidence of dental disease was noted in migrant children, as in previous years.

Of 19,989 children in the age groups 6–9 years who were examined prior to treatment, 58·7 per cent required treatment of an urgent nature. Only 20·2 per cent had naturally healthy teeth as far as could be ascertained without radiography. Of the 12,125 offered free treatment in this particular assessment, 68·6 per cent accepted.

DENTAL TREATMENT IN N.S.W. SCHOOLS

Examinations	82,053
Notifications	19,359
New Patients	20,014
Total Appointments	81,853
Extractions	27,011
Fillings	85,472
Other Treatments, including Prophylaxis	95,066
General Anaesthetics	44
Dentures	69
Orthodontic Appliances	385

AERIAL DENTAL SERVICE—ROYAL FLYING DOCTOR SERVICE

The usual annual subsidy of $5,000 was provided to the Royal Flying Doctor Service (N.S.W. Section) to assist with transport of Health Department personnel to the remote parts of New South Wales, South Australia and Queensland from Broken Hill. The dental team travelled 44,547 miles by air and 5,473 miles by road. Visits were made to schools on 74 occasions, to hospitals on 46 and to homesteads 116. Additional dental equipment is being progressively established in this area as it becomes available. This results in a minimum of heavy items being loaded and carried by the Beagle aircraft. The service is now an established one in the area, and together with the Western Shires Dental Service, covers the western half of New South Wales. Due to the resignation of the dental nurse to marry, the output of work was less than in previous years. Treatment completed—

Examinations	989
New Patients	827
Total Appointments	2,733
Extractions	837
Fillings	2,377
Treatments, including Prophylaxis	2,884
Dentures	29

INSTITUTION SERVICE

The staffing position improved in the institutions during the year. There are now three honours graduates working in this field. The additional officer for the Newcastle region was recruited with beneficial results.

The general anaesthetic service provided by the Division of Establishments of the Health Department was of particular value. This amounted to 292 procedures.

Psychiatric Hospitals

New dental clinics were established at Newcastle and Rydalmere Hospitals. New equipment was installed at Kenmore, Parramatta, Stockton, and Morisset Hospitals. New equipment was received at Callan Park to be installed in a new, larger location. New equipment was also ordered for Peat Island Hospital. A number of outpatients were treated at Marsden Hospital.

Services completed—

Examinations	8,763
New Patients	2,890
Total Appointments	11,034
Extractions	4,457
Fillings	3,574
Other Treatments, including Prophylaxis	7,004
General Anaesthetics	292
Dentures	432
Denture Repairs	355

State Hospitals and Homes

The new dental clinic was completed at Lidcombe Hospital, and a new clinic was finalized at Randwick Chest Hospital. The services were maintained on a regular basis to Grosvenor, Garrawarra, and Strickland Hospitals. The policy of supportive, rather than comprehensive, treatment was continued to geriatric patients.

Services completed—

Examinations	1,533
New Patients	668
Total Appointments	2,066
Extractions	1,819
Fillings	452
Other Treatments, including Prophylaxis	908
General Anaesthetics	50
Dentures	170
Denture Repairs	51

Penal Establishments

The services were continued to the penal establishments throughout 1971. The new clinic functioned well at Silverwater, and the surgeries were remodelled with new modern equipment at Goulburn, Bathurst, Grafton, and Emu Plains. There has been some delay at the Parramatta Prison due to the need for rebuilding the dental clinic area. Some additional equipment was also installed at the Glen Innes Training Farm. A dental clinic has been included in the proposed Hospital Block at the new Cessnock Prison.

Services completed—

Examinations	2,355
New Patients	2,849
Total Appointments	6,491
Extractions	3,157
Fillings	2,199
Other Treatments, including Prophylaxis	4,264
General Anaesthetics	3
Dentures	358
Denture Repairs	123

Child Welfare Department Homes

Despite some difficulties the dental service operated to child welfare homes during 1971. Services were improved to Yawarra at Kurri Kurri. Some of the clinics have been in continuous operation since 1955, and the Child Welfare Department has been requested to provide funds to remodel the surgeries at Mt Penang, Mittagong, and Bowral. Some additional X-ray facilities were provided at Mittagong and Mt Penang. A dental clinic has been included in the proposed new training school for girls at Campbelltown. As in past years regular visits were made to the smaller homes in the school vacation periods.

Services completed—

Examinations	4,081
New Patients	2,241
Total Appointments	7,584
Extractions	2,309
Fillings	7,316
Other Treatments, including Prophylaxis	5,782
General Anaesthetics	1
Dentures	272
Denture Repairs	70
Orthodontic Appliances	1

CONCLUSIONS

The year under review was more than satisfactory in relation to the dental service to Government institutions. The work accomplished by the School Dental Service was satisfactory, but only as far as the service extended because of the relatively small staff. The service to the western half of New South Wales provided conjointly with the western shires scheme and the Royal Flying Doctor Service was very successful.

Fluoridation continued to progress well in the State and approximately 80 per cent of the population now have fluoridated water. It would be rewarding if the remaining 90,000 children under eight years of age living in the smaller centres could be provided with fluoride supplements in tablet form. Despite the inherent difficulties, the Health Department is attempting such a programme.

The report of the Dental Services Advisory Committee will be finalized early in 1972. This suggests a definite pattern of development in dental services concurrent with the consolidation of health services on a regional basis.

In this programme of development it is essential that additional therapeutic services be implemented for school children on a statewide basis. It is also essential to provide dental treatment to adults who are physically or financially incapacitated, by means of outpatient dental departments in the general hospitals.

CENTRAL CANCER REGISTRY

Registrar: Joyce M. Ford, M.B., B.S., B.Sc., Grad. Dip. Health Admin.

Location: 9–13 Young Street, Sydney 2000

STAFF

1 Senior Clerk
1 Stenographer
2 Typists (one vacancy)
1 Office Assistant

COMMENTS ON STAFF

The registrar and a senior clerk were appointed early in June 1971. However, the senior clerk resigned on 14th September, 1971, and was replaced by the present senior clerk on 20th September. The stenographer, one typist and the office assistant were appointed early in October 1971. There is at present one vacancy for a typist.

INTRODUCTION

The three major causes of death in Australia are diseases of the circulatory system, cancer, and diseases of the nervous system in that order. In 1967, the death rates from these causes of death in New South Wales were 3,928, 1,405, and 1,337 respectively per 1,000,000 of the population. By contrast the death rate from motor vehicle accidents for the same year was 267 per 1,000,000 of the population. In 1970 the death-rate for cancer had risen to 1,482 per million of population, and for car accidents to 301 per million of population.

The population for New South Wales by censuses is given in table 1, and the total deaths for New South Wales and Australia are given in table 2.

TABLE 1—POPULATION (*) BY SEX—CENSUSES NEW SOUTH WALES

Year	Total	Males	Females
1954	3,423,529	1,720,860	1,702,669
1961	3,917,013	1,972,909	1,944,104
1966	4,233,822	2,124,462	2,109,360
1971	4,589,556	2,302,110	2,287,446
(Preliminary figures only for 1971)			

*Excludes full-blood Aborigines.

TABLE 2—DEATHS, SEXES: NEW SOUTH WALES AND AUSTRALIA, 1970

Sex	New South Wales		Australia
	Total deaths	Cancer deaths	Total deaths
Male	24,123	3,793	62,828
Female	19,478	2,988	50,220
Persons	43,601	6,781	113,048

The death rate from cancer in New South Wales has risen from 982 per 1,000,000 of the population in 1924 to 1,482 per million in 1970. (Table 3.)

TABLE 3—MORTALITY FROM CANCER IN NEW SOUTH WALES PER MILLION OF POPULATION

Year	Males	Females	Persons
1924	982	932	958
1934	1,077	1,038	1,058
1944	1,092	1,203	1,148
1954	1,396	1,256	1,326
1964	1,532	1,372	1,408
1967	1,543	1,266	1,405
1968	1,606	1,276	1,442
1970	1,651	1,312	1,482

Substantially this increase is due to a greater proportion of persons reaching the age group 60 years and above, thus increasing the number of persons at risk. There has been actual increase in some varieties of cancer, the most publicized of which is lung cancer. Although the steepest increase in cancer death rates is occurring in age groups 60 years of age and above, there are certain types of cancer which have significant mortality in age groups below this level.

What is more important in the overall population is that the percentage of deaths due to cancer (expressed as a total mortality) is increasing as other causes of mortality, particularly from the infectious diseases are decreasing. The significance of cancer (expressed as a percentage of total mortality) for the New South Wales population is demonstrated in table 4.

TABLE 4

Year	Percentage of total deaths due to cancer		
	Males	Females	Persons
1924	9·36	11·34	10·21
1934	10·83	12·98	11·77
1944	10·83	14·20	12·36
1954	13·10	14·98	13·92
1964	14·59	14·81	14·68
1967	15·20	15·38	15·28
1970	15·72	15·34	15·55

Until comparatively recent times the prognosis from cancer was gloomy and the possibility of survival of the individual depended largely upon the personal experience and dexterity of the surgeon, assisted in varying degrees by the radiotherapist. The problem of cancer rested almost entirely with the medical profession and was directed towards individual therapy. Governments were concerned only with limited control programmes towards certain industrial cancers, and not with the mass of the population and the common neoplasms involving the community.

The attitude of Governments was conditioned largely by the unfavourable prognosis of the disease generally due to deficiency in medical knowledge and in medical technology, and the paucity of knowledge of preventive factors. Nor did Government medical services have the resources to devote to anti-cancer programmes, being almost totally absorbed in the prevention and treatment of infectious diseases, and particularly the impact of these diseases on children and young adult groups.

CANCER PREVENTION AND CONTROL

The attitude of Governments towards cancer has radically changed over the past two decades. It is now accepted by Governments, and the profession, that the responsibility for the anti-cancer programmes cannot remain solely with the medical profession and rely only on the extension of therapeutic measures to the patient. The profession's resources must be assessed and co-ordinated, and Governments must support and stimulate all facilities necessary for the prevention, control, treatment and audit of this cause of mortality.

This change in attitude has been brought about by:

(i) The significance of cancer as a major contributor to the total mortality of the community, and the increasing significance which cancer carries in this regard with increase in longevity and the ageing of the population.

(ii) The aftermath of research demonstrated in substantial advances in the knowledge of the natural history of cancer, and equally dramatic improvement in techniques for its treatment.

(iii) The optimistic prognosis for 5-yearly periods of survival due to improvements in diagnosis and more rational therapy, and the importance of early diagnosis for total cure.

(iv) A better knowledge of some of the causative or contributing factors in certain types of cancer, so enabling preventive measures and programmes to be devised.

(v) The dramatic decrease of the infectious diseases and the success of control programmes against these diseases. These diseases are no longer important contributors to mortality, and their influence on morbidity has diminished considerably. This has enabled the release of Government resources towards combating other causes of mortality of significance, including cancer.

(vi) Public demand on Governments for control measures due to improved health education and public awareness.

The responsibilities which Governments have accepted in the control of cancer as a public health problem consist of vigorous health education programmes; stimulation of avenues of research, including opportunities for training doctors in research methods and techniques; provision of adequate therapeutic facilities in the hospital system, and mechanisms of co-ordination for the total approach to this problem. It has also accepted immediate responsibility for certain preventive programmes directed to those types of cancer where early detection on a mass scale can be organized through community participation, such as Papanicolaou smear centres for early detection of cancer of the uterus, self-examination campaigns for cancer of the breast, etc.

In New South Wales the approach has been by the establishment of the New South Wales State Cancer Council as the central co-ordinating and educational authority. Therapeutic facilities are based largely upon the hospital system of the State, and particularly in the larger hospitals and teaching hospitals. The Papanicolaou screening centre is located at the Institute of Clinical Pathology and Medical Research.

Although there is a central mechanism to co-ordinate the agencies active in the treatment of cancer or cancer research, as yet there is no central mechanism to provide an assessment of results. Such a mechanism can be achieved through the establishment of a central cancer registry to obtain basic information on the epidemiology of cancer on a population basis.

THE CENTRAL CANCER REGISTRY

The first report of an Expert Committee on Cancer Control of the World Health Organization (1963) outlined certain general principles which should be taken into consideration in all cancer control programmes. One of its recommendations pertinent to this concept of a central registry is:

> There should be a comprehensive cancer registration which will furnish accurate statistics on morbidity and mortality and assess epidemiological factors.

The functions of the central cancer registry include:

(i) Statistics and studies of the epidemiology of cancer. Such a registry is essential to demonstrate the extent of the problem which cannot be assessed accurately from mortality figures. The Post-Graduate Committee in Medicine of the University of Sydney stated in relation to this function that:

> A good deal has been learnt from cancer mortality statistics about the incidence of cancer; there are important aspects of morbidity about which little information is now available. Owing to the existence of special geographical situations, hospital policy and other factors, no one hospital can have an experience typical of the whole State. A statewide view can only be obtained by pooling information from the various hospitals and clinics.

Human cancer has many features which are peculiar to man, and which are modified by factors such as geography, occupation, social status, ethnic composition of the population, etc. Of primary importance in the epidemiology of cancer is the compilation of adequate morbidity statistics which can only be achieved through a central registry. On these statistics can be based programmes towards the early detection and prevention of cancer.

(ii) *Sociology of Cancer:* Social status and economic adequacy are important factors which may impede the individual in seeking early diagnosis, or access to treatment facilities. Social and economic strata do not readily correlate in the Australian population as in overseas countries where economic levels in the community are more clearly differentiated. For this reason the degree of correlation between social status and occurrence of cancer by type of cancer has to be assessed for local circumstances from a central repository of information.

(iii) *Follow-up and evaluation of treatment:* This State, and, in fact, this country is deficient in medical audit facilities to assess follow-up and results of treatment of cancer. There is a small number of individual cancer registries attempting this function for specific types of cancer such as lung cancer, uterine cancer, and leukaemia.

Treatment can only be assessed by continuing follow-up studies from a central source. Such studies are essential to improve medical therapy, and also on economic grounds—the latter having substantial implications in the financial liabilities of the hospital system of the State as well as the impairment of the productivity of the individual suffering from this disease.

The effectiveness of treatment can be modified by local factors. Consistently it has been demonstrated that experience in other States, and other countries, is not readily translatable in terms of results to the local scene.

In the mechanical procedures of follow-up a central registry is more effective and economical than individual registries because it is functionally organized for this purpose to maintain references of patients moving from hospital to hospital, and, in association with central registries in other States, of patients moving interstate. Furthermore, a central registry, if Government-sponsored, has advantages not possessed by local registries. For example, it has access to the list of cancer deaths in the records of the office of the Registrar General thus ensuring a completeness in coverage of patients from discovery of the disease to death.

THE ORGANIZATION OF THE CENTRAL CANCER REGISTRY IN NEW SOUTH WALES

The National Health and Medical Research Council had been considering the concept of State-sponsored central cancer registries for some years, and the Medical Statistics Committee of the National Health and Medical Research Council had on several occasions proposed that the Council should recommend to the States along these lines.

To develop this concept further in New South Wales a committee was appointed by the New South Wales State Cancer Council in 1967 consisting of—

Dr C. J. Cummins, Director-General of Public Health—Chairman.

Dr A. Lilley, the Medical Director of the New South Wales State Cancer Council.

Dr D. Storey, a member of the Hospitals Commission.

Dr G. Scott, Epidemiologist, from the School of Public Health and Tropical Medicine, Sydney.

Dr K. Starr, the Medical Director-elect of the New South Wales State Cancer Council.

The findings of the Committee can be summarized as follows:

1. Feasibility

The Committee was of the opinion that a central State cancer registry was feasible and desirable in New South Wales provided that the information collected was basic and concerned with the identification of the patient (including the standard statistical variables of age, race, sex, occupation, etc.); the identification of the cancer and broad indications of the type of treatment, and the identification of the hospitals from which the patient received medical and/or nursing care. Restricted to this information a central cancer registry would be both practicable and economic.

The information could be obtained by compulsory notification from hospitals on the basis that all cancer patients at some time would need to seek hospital attention. The only modification to this proviso related to skin cancer, other than melanoma. There would be considerable difficulty in diagnosis between precancerous and cancerous stages of skin cancer, and many, if not the majority, of skin cancers are treated by private dermatologists without admission to hospital. For these reasons the Committee, established by the New South Wales State Cancer Council, proposed that skin cancer should not be included in the list of notifiable cancers.

2. Function

The Committee assessed the function of the State Central Cancer Registry as—

(a) The determination of incidence of cancer in the State. This would contribute to the total knowledge of cancer, and would permit basic epidemiological dissections by age, sex, country of birth, etc. There is no source from which incidence can be accurately determined in Australia. Death rates are unreliable, except as long term indices, and are influenced by many variables which do not influence incidence.

A knowledge of the mosaic of cancer throughout the State would enable an audit in preventive and therapeutic programmes, and also provide the basic information on which educational and other programmes can be based. Comparison of incidence with other countries of like or different ethnic capacities may point to local factors which are influencing susceptibility of certain groups to certain types of cancer, and which perhaps can be ameliorated or modified.

(b) A central source from which specific studies could be stimulated and from which information could be distributed to existing registries with a dedication to a single variety of cancer or a generic group of cancers. Such registries may have to modify their objectives and would need to have some form of approval or recognition to conform with this functional complex.

3. Organization

(1) *Notification:* The basis of the organization of the Central Cancer Registry would rest on notification from hospitals on the basis of a monthly return of deaths from cancer occurring in the hospital or discharges from the hospital of patients suffering from cancer.

For the purpose of definition of "hospital" the radiotherapy department would be included in the notification formula.

(2) *Control:* The committee reported in 1967 that the control of the registry should be a function of the New South Wales State Cancer Council. Subsequently, after Dr Starr became Medical Director of the New South Wales State Cancer Council, he suggested that the registry should be organized and conducted by the New South Wales Department of Health. This principle was accepted formally and endorsed by the New South Wales State Cancer Council.

(3) *Administration and Staff:* The committee set down the general outline of the staff establishment of the registry and outlined the general qualifications of the director, viz., a medical scientist with experience and training in management.

METHOD OF ESTABLISHMENT OF THE CENTRAL CANCER REGISTRY

In order to establish the central cancer registry, an amendment to the Public Health Act, 1902–1965, was necessary to make cancer a notifiable disease. The only diseases which could be declared notifiable under the Public Health Act were the infectious diseases under part III of the Act as listed in note A following the second schedule of that Act.

A new section was therefore created to provide for the notification of dangerous diseases, namely part IIIA, and this part of the Act was approved by Parliament in 1970.

In reads as follows:

2. The Public Health Act, 1902, is amended—

(a) .....

(b) (i) .....

(ii) .....

(c) by *inserting* next after Part III the following new Part;

PART IIIA.

DANGEROUS DISEASES

Interpretation.

50B. In this Part, except in so far as the context or subject-matter otherwise indicates or requires—

"chief executive officer, in relation to a hospital that is—

(a) referred to in paragraphs (a), (b) and (c) of the definition of "hospital" in this subsection—means the person who is responsible for the executive management of the hospital, by whatever title he is known;

(b) referred to in paragraph (d) of that definition—means the manager, within the meaning of the Private Hospitals Act, 1908, of the hospital; or

(c) referred to in paragraph (e) of that definition—means the person specified or described, in relation to the hospital, in the regulations;

"dangerous disease" means a disease declared to be a dangerous disease under section 50C of this Act;

"hospital" means—

(a) a hospital mentioned in the Second or Third Schedule of the Public Hospitals Act, 1929;

(b) a hospital conducted by the Department of Public Health;

(c) an admission centre, authorized hospital or mental hospital within the meaning of the Mental Health Act, 1958;

(d) a private hospital or rest home within the meaning of the Private Hospitals Act, 1908; or

(e) such other institutions as may be prescribed.

50C. The Governor may, by proclamation in the Gazette, declare that any disease therein named or described is a dangerous disease, and he may in like manner revoke or vary any such declaration. Powers of Governor.

50D. The chief executive officer of a hospital shall, in the prescribed manner, in or to the effect of the prescribed form and at the prescribed times, furnish a return to the Director-General of Public Health setting out the prescribed particulars in respect of the prescribed class or classes of persons who are or have been suffering from a dangerous disease and who are or have been patients of, or attending, the hospital. Notification of dangerous diseases.

Penalty: Fifty dollars.

50E. (1) The Governor may on the recommendation of the Board make regulations for or with respect to prescribing all matters which by this Part are required or permitted to be prescribed or which are necessary or convenient to be prescribed for carrying out or giving effect to this Part. Regulations.

(2) The regulations may impose a penalty not exceeding fifty dollars for any breach thereof, or, where the breach is a continuing one, not exceeding twenty dollars for every day that the breach is continued.

(d) by *omitting* from paragraph (c) of subsection one of section one hundred the word "registered". Sec. 100 (Method of service).

The regulations under the Public Health Act, 1902, were amended in 1971 and appeared in *Government Gazette* No. 139 of 3rd December, 1971, as did the Proclamation declaring the disease of cancer, so defined, to be a notifiable disease from 1st January, 1972.

The regulations as amended are set out herewith:

(a) by *inserting* in Regulation 1 next after the matter relating to Part II the words "Part IIA—Dangerous Diseases. Regulations 34A and 34B";

(b) by *inserting* next after Part II the following new Part:

PART IIA—DANGEROUS DISEASES.

34A. In this Part of these Regulations—

"Cancer" means a neoplasm of human tissue that is malignant, and that if unchecked invades adjacent tissues or extends beyond its site of origin, and that has the propensity to recur, either locally or remotely in the body and includes carcinoma, sarcoma, mixed tumours, leukaemias and other lymphomas, but does not include neoplasms of the skin other than melanoma.

34B. For the purpose of section 50D of the Act relative to the dangerous disease cancer—

(a) the prescribed manner is—by post addressed to the Director-General of Public Health, Department of Health, Box 3944, G.P.O., Sydney;

(b) the prescribed form is—a form in or to the effect of Schedule 13A;

(c) the prescribed times are—

(i) on or before the 28th day of February, 1972; and

(ii) on or before the 28th day of each succeeding month;

(d) the prescribed class of persons is—such patients of the hospital who, during a month next preceding a prescribed time, are or have been suffering from cancer and who—

(i) have been discharged from the hospital;

(ii) have been transferred from the hospital;

(iii) have died in the hospital; or

(iv) have attended the radiotherapy department of the hospital for the first occasion since the next preceding month of December; and

(e) the prescribed particulars shall be such particulars relating to the prescribed class of persons as are required by the prescribed form.

(c) by *inserting* next after Schedule 13 the following new Schedule:

SCHEDULE 13A—N.S.W. DEPARTMENT OF HEALTH

NOTIFICATION OF CANCER—Regulation 34B PUBLIC HEALTH ACT, 1902. Forms are to be completed for all patients with cancer on every separation* from the hospital and on attendance for the first time in each calendar year at the Radiotherapy Department. Please see instructions inside front cover.

1. Name of hospital | FOR OFFICE USE ☐☐☐☐☐☐☐☐☐☐

2. Surname | First names

3. Former surname(s) (including maiden name) if relevant | Sex M ☐ F ☐ | 3. Unit record No.

4. Usual residential address | Postcode

5. Date of birth DAY ☐☐ / MONTH ☐☐ / YEAR ☐☐☐☐ | If not known, give approximate age ☐☐

6. Country of birth—(specify) | Length of Residence in Australia

7. Name of Doctor: (a) in charge of case
(b) usual private doctor if different from (a) (if same, write "as above")

8. Address of usual private doctor (b) in Q. 7 | Postcode

9. Date of admission ☐☐ / ☐☐ / ☐☐☐☐ | 10. Date of separation* ☐☐ / ☐☐ / ☐☐☐☐

11. Status at separation*: Discharged ☐ : Transferred to another hospital ☐ : Transferred for nursing or convalescent care (including transfer to a terminal hospital) ☐ : Died ☐

HISTORY AND DIAGNOSIS

12. Date of first definitive treatment for cancer: Month ☐☐ Year ☐☐ | Not known ☐

13. Was this admission for cancer? Yes ☐ | No ☐ | Specify condition for which admitted

14. PRIMARY SITE OF CANCER: | More than one primary site No ☐ | Yes ☐ Use separate forms**

15. Method of Diagnosis of Cancer at this admission:

☐ clinical (including by previous history; radiology, X-ray, isotopes; chemical or other non-histopathological method)

☐ histopathology or cytology (exfoliative or smears)

16. Histological type of cancer (specify)
(Simple detail only)

17. Degree of spread of cancer at this admission: in-situ ☐ : localised to tissue of origin ☐ : invasion of adjacent organs ☐ : regional lymph nodes involved ☐ : distant metastases ☐ : Not known ☐ : Not applicable ☐

STATEMENT OF NATURE OF TREATMENT AT THIS ADMISSION

18. Method of treatment at this admission: For combined therapy, check all relevant boxes:

☐ Surgery
☐ Radiation therapy (including isotopes)
☐ Hormonal therapy
☐ Chemotherapy
☐ Other (specify).....
☐ No specific treatment (incl. nursing care)

19. If surgery performed: (a) Principal operation.....
(b) Other operation(s).....

20. If radiation therapy was given, name location of department or practice:

SIGNATURE.....*CHIEF EXECUTIVE OFFICER.* *DATE*.....

* discharge, transfer or death. ** see instructions inside front cover.

THE CANCER NOTIFICATION FORM

SCHEDULE 13A—REGULATION 34B

The cancer notification form was developed from work carried out by the special Committee set up by the State Cancer Council in 1967, with reference to the form used for the morbidity survey conducted by the Hospitals Commission of New South Wales. The first section relating to patient identification follows as closely as possible information already being asked for in hospitals on the admission of patients. The sections for history and diagnosis and treatment deal with the particular admission for which the form is being completed.

It was realized that the introduction of compulsory notification of cancer by hospitals would place upon hospital staff an extra work load for which it was felt they should be prepared as adequately as possible prior to the statutory date. To facilitate the completion of the form by having a sequence and format of questions which could be rapidly assimilated and answered by the hospital personnel involved, it was decided to conduct a pilot study of the notification form.

Pilot Study—Cancer Notification Form

A pilot study was carried out in August–September, 1971, using forms which were almost identical with the final notification form. The aims of the study were:

(1) To assist in finalizing the cancer notification form by examining completed forms and assessing comments from hospitals obtained by questionnaire.

(2) To estimate the number of patients likely to be registered each month from 1972 onwards.

(3) To work out a system of registering, checking and coding the forms.

(4) To provide information necessary for the preliminary steps of writing a computer programme to process the data obtained on the forms.

Thirty hospitals were selected on the basis of bed capacity (adjusted daily average) and the likelihood of adequacy of numbers of appropriate cases being notified. Of these, 26 were able to participate. Because of the shortage of time available to conduct the study, assess the results, incorporate them into the notification form, finalize the form and have it appropriately drafted in to the Regulations and proclaimed a statutory form, the hospitals necessarily had to be chosen in the metropolitan area of Sydney and environs, and had to be hospitals treating large numbers of cancer cases. Thus the pilot study was not conducted in a statistically sampled selection of hospitals. The hospitals chosen for the pilot study were:

*Royal Newcastle	Royal Alexandra	Sutherland
Mater (Newcastle)	*Royal North Shore	*Scottish-Paddington
Wallsend	Royal Prince Alfred	"Jean Colvin"
Gosford	Sydney	Blacktown
Wollongong	Women's, Crown Street	Fairfield
Port Kembla	Bankstown	Liverpool
Balmain	Royal For Women	Parramatta
Hornsby	*Prince Henry—Prince of Wales	Ryde
Manly	St George	"Moorong"
Mater (North Sydney)	St Vincent's	Nepean and District

* These hospitals did not participate.

Approval was given by the Hospitals Commission to approach these hospitals and to conduct the pilot study. By the end of July the majority of hospitals had been visited by the registrar and the senior clerk, and by the beginning of September the notification forms for the study had been printed and distributed, together with explanatory notes on completion. The number of forms returned to the registry for the pilot study by the 26 hospitals was 556, of which 530 were able to be analysed. Because of the method of selection of hospitals, no statistics for this study can be published.

Nine hospitals continued to complete notification forms on separation of cancer patients for October, November and December, 1971, to maintain the continuity of the system set up for the pilot study. These hospitals changed to the statutory form from 1st January, 1972.

HOSPITALS NOT COVERED BY THE REGULATIONS

The hospitals conducted by the Repatriation Department—Repatriation General Hospital, Concord, and Lady Davidson Hospital, Turramurra—as well as the Canberra Community Hospital, A.C.T., do not fall within the scope of the New South Wales Public Health Act, 1902. Because these hospitals treat large numbers of cancer patients who are residents of New South Wales, a request was made to these hospitals to co-operate with the registry on a voluntary basis in the notification of cancer patients. The hospital authorities agreed, and both New South Wales and these institutions should benefit from the more complete and accurate statistics thus obtained.

HOSPITAL VISITS

It is anticipated that all public hospitals, private hospitals and nursing homes in New South Wales (a total of approximately 875 institutions) will be visited by the registrar during the next 18 months, to establish personal contact, and to assist with problems which may arise in hospitals in completing the notification form.

The number of hospitals visited to the 31st December, 1971, was as follows:

Institution	Metropolitan area	Country district	Total
Public hospitals (including Repatriation Department and radiotherapy departments)	35	20	55
Private hospitals	18	6	24
Nursing homes	69	18	87
Totals	122	44	166

ADVISORY COMMITTEE TO THE CENTRAL CANCER REGISTRY

Those members of the original Committee set up by the State Cancer Council to look into the establishment of the Central Cancer Registry had formed a committee called the Hospitals Programmes and Central Cancer Registry Committee. The knowledge and experience of the members of this committee, and of other interested persons, was considered too valuable to be lost on establishment of the Cancer Registry, and therefore it was decided that an advisory committee to the Central Cancer Registry would be established to act in that capacity, namely, to advise the Registrar on statistics to be produced, to assist in planning future functions of the registry, particularly patient follow-up, and to suggest areas where research may be necessary. The members of this Committee are:

Chairman: Dr C. J. Cummins, Director-General of Public Health.

Members: Dr R. Melville, representing the Post-Graduate Committee in Medicine, University of Sydney.

Professor K. R. Cox, representing the University of New South Wales Post-Graduate Committee in Medical Education.

Dr F. W. Niesche, representing the New South Wales State Cancer Council.

Dr D. Storey, representing The Hospitals Commission of New South Wales.

Professor L. Atkinson, Director of Radiotherapy Department, Prince of Wales Hospital, Randwick.

Dr G. Scott, The School of Public Health and Tropical Medicine, University of Sydney.

Dr H. Kramer, Director, Institute of Clinical Pathology and Medical Research, Lidcombe.

Dr J. F. S. McKee, representing The Repatriation Department.

This Committee is informal, but a record of the minutes is kept at the registry. Meetings were held on 29th July and 22nd November, 1971.

PUBLICATIONS

Articles were published in the *Newsletter for Medical Practitioners*, the *A.M.A. Gazette* and Winthrop's *Impulse* each setting out a short resume of the establishment of the Central Cancer Registry. Contact was also made with the International Agency for Research on Cancer and with M. D. Anderson Hospital and Tumour Institute, Texas.

WESTERN METROPOLITAN HEALTH DISTRICT

Medical Officer of Health: T. F. Rennie, M.B., Ch.B., D.P.H., F.A.C.M.A.

Deputy Medical Officer of Health: P. J. Christopher, M.B., B.S., D.P.H.

Location: First floor, Government Insurance Office Building, 307 Church Street, Parramatta.

The district comprises the areas of the cities of Parramatta, Campbelltown, Liverpool, Penrith and Blue Mountains, the municipalities of Auburn, Blacktown, Camden, Fairfield, Holroyd and Windsor and the shires of Baulkham Hills and Colo.

A notable event of the year was the redistribution of the boundary of the Western Metropolitan Health District. This action was taken on application by the City of the Blue Mountains Council and is in accord with the principle of unifying the boundaries of the administrative regions of the various State departments.

STAFF

There have been no major staff movements since last year. However, difficulty was experienced maintaining a full complement of baby health centre sisters during the year, and at times it was necessary to close centres because of shortage of staff. An assistant medical officer of health was seconded to the district for the greater part of the year. A social worker was appointed to the Blacktown area in April. Her main responsibilities are with family problems encountered by baby health centre sisters in that area.

Staff as at 31st December, 1971

1 Medical Officer of Health.
1 Deputy Medical Officer of Health.
2 Senior Medical Officers.
9 Medical Officers.
1 Principal Dental Officer.
8 Dental Officers.
2 Principal Psychologists.
1 Psychologist.
4 Social Workers.
4 Speech Therapists.
17 Child Health Sisters.
51 Baby Health Centre Sisters (part-time officers included).
3 Dental Nurses.
8 Dental Assistants.
1 Senior Health Inspector.
1 Senior Food Inspector.
4 Health Inspectors.
3 Food Inspectors.
1 Assistant Nurse Inspector.
1 Health Education Officer.
1 Senior Clerk.
1 Shorthand Writer/Typist.
1 Telephonist/Typist.
4 Office Assistants.

GENERAL

The estimated population in the district at 30th June, 1971, was 810,833. The district has the highest birth rate and the lowest death rate in the State.

Information from the State Planning Authority indicates that the population and development in the district will continue to increase rapidly, in particular in the Campbelltown, Mt Druitt, and Penrith areas.

The working party examining aspects of the Starr Report visited the districts on 20th May. Another distinguished visitor to the district was Mr Joel of the Committee of Inquiry into Health Services in South Australia.

The Medical Officer of Health was invited to lecture on social medicine and aspects of public health at the University of Sydney, the University of N.S.W. and the in-service training courses at Randwick Chest Hospital. Lectures by the medical officer of health and his staff were also given to the New South Wales College of Nursing and the Auburn Hospital. A course for swimming pool operators was arranged by the senior health inspector.

The Medical Officer of Health was appointed and continued to work on numerous committees including the Western Metropolitan Health and Hospital Services Committee, the Interdepartmental Committee for Essential Services in Rapidly Developing Housing Areas, the Departmental Child Accident Committee and the Campbelltown Technical Liaison Committee. The deputy medical officer of health continued as a member of the Interdepartmental Committee on Zoonoses, and the Mount Druitt-Blacktown Steering Committee.

With the greater awareness for community medicine the Medical Officer of Health was involved in planning future community health services for the Westmead, Nepean and Liverpool Hospitals, and he took part in a seminar held by the College of General Practitioners at Leura, where he was appointed to the working party on health centres.

The Medical Officer of Health took part in a simulated disaster exercise in his capacity as an area medical co-ordinator for the Sydney Disaster Plan.

A management by objectives programme was carried out by the Deputy Medical Officer of Health and the senior medical officer of the Cabramatta Child Health Centre. The results of the project were presented at four conferences for senior executives held by the N.S.W. Institute of Administration.

A study of absenteeism at Marsden Hospital was undertaken by the Assistant Medical Officer of Health. The Deputy and Assistant Medical Officers of Health conducted antenatal clinics at Blacktown and Mount Druitt Baby Health Centres.

COMMUNICABLE DISEASES

Fortunately there were no large outbreaks of infectious disease in the district and the pattern of communicable diseases remained much the same as that in the previous year. Again it is apparent that the incidence of communicable diseases, especially venereal disease is under reported.

An investigation of infectious hepatitis was carried out with the aid of information supplied by the Blacktown Council's Health Department. Each case notified to council was investigated using a standard questionnaire. The information so gained did not assist in determining sources of infection, and the results of the investigation did not add to the data of the pattern of infectious hepatitis in New South Wales, as published in the 1967 Report of the Director-General of Public Health.

Tetanus immunization clinics were held for the staff of various Department of Agriculture establishments in the district. Smallpox immunization clinics were also held for ambulance personnel stationed in the district.

An outbreak of salmonella food poisoning occurred in a closed institution for girls and boys (fifty-three girls and eighty boys). It was peculiar in that only the girls were affected. Over 3 days twenty-four girls and one member of the female staff had diarrhoea, vomiting, colicky abdominal pain, and some also had low-grade fever. Two of the girls were severely ill and had to be hospitalized. The food for both the boys and girls sections was the same, and was prepared in the one kitchen. Contamination probably occurred during the process of distribution. Examination of stools from seven patients showed Salmonella "newport". Examination of stools from food handlers was negative for salmonellae.

TABLE 1—COMMUNICABLE DISEASES WITH DEATHS 1971

	Cases	Deaths
Acute anterior poliomyelitis	..	..
Anthrax	..	..
Arbovirus diseases	..	..
Brucellosis	1	..
Diphtheria	1	..
Encephalitis	4	4
Hydatid disease	1	..
Infantile diarrhoea	157	2
Infectious hepatitis	527	3
Leptospirosis	..	..
Malaria	2	..
Ornithosis	..	..
Paratyphoid	..	..
"Q" fever	..	..
Tetanus	..	..
Typhoid fever	1	..
Typhus fever	..	..
Syphilis	5	..
Gonorrhoea	59	..

MATERNAL AND CHILD HEALTH

By the addition of the Blue Mountains City Council area to the Western Metropolitan Health District, the establishment was increased by five baby health centres and two sisters.

The annual conference on 5th November, 1971, took the form of a seminar, entitled "The Changlings". The speakers were Dr G. Angel-Lord, Dr J. Chapman, and Dr W. Thompson.

There are forty-nine baby health centres in the Health District with a staff of thirty-two full-time officers and nineteen part-time officers together comprising 43$\frac{3}{5}$ units of staff.

During 1971 attendances at baby health centres increased by 13,323 (7 per cent). New-born attendances also rose by 941 (6·2 per cent). Home visiting and hospital visiting figures were both down due to staff shortages and the use of sisters for short relief.

Inspections were undertaken at all baby health centres.

TABLE 2—BABY HEALTH CENTRES

	1970	1971
Attendances—		
Under 1 year	175,186	188,778
Over 1 year and under 2 years	14,683	14,602
Over 2 years	7,648	7,460
	197,517	210,840
Babies attending for the first time—		
Under 1 year	15,906	16,338
Over 1 year and under 2 years	Not recorded	350
Over 2 years	Not recorded	159
	15,906	16,847
Home visiting—		
First visits	4,352	1,750
Subsequent visits	5,939	2,216
Not seen	Not recorded	1,571
	10,291	5,537
Hospital visiting—		
Time spent	3,703 hours	1,940 hours
Number of mothers seen	8,122	8,133
Individual attendances	29,720	34,459

CHILD HEALTH SERVICES

The child health centre established at Parramatta provides school medical services to the municipality of Auburn, the city of Parramatta, and the shire of Baulkham Hills. The child health centre at Cabramatta provides similar services for the city of Liverpool, the municipalities of Fairfield and Holroyd. Staff shortages were experienced at both centres and it has not been possible to complete medical examinations in all schools.

PARRAMATTA CHILD HEALTH CENTRE

The centre was without a fourth medical officer for two lengthy periods during the year and this accounted for some of the lower figures of examinations and interviews during 1971 as compared to 1970.

Due to aligning with local authority boundaries on 1st January, 1971, the school population of the health centre area dropped from 49,000 in 1970 to 45,400 in 1971. However, the total number of schools rose from 88 to 91.

Medical examinations were carried out in fifty-four schools. However, thirty-seven schools and thirteen preschool kindergartens were not medically inspected during 1971.

All children admitted to opportunity A classes, opportunity D classes, partially seeing units and opportunity P classes in the area during the year, were offered centre appointments with their parents so that the children's full medical background could be elucidated and full medical examinations could be carried out. The number seen from opportunity A class placements contributed to the relatively large number of children seen with mental retardation.

The centre played host to numerous students of psychology, speech therapy and social work throughout the year. Fifth year medical students attended the consultant psychiatrist's sessions in groups and a large number of medical officers from Rydalmere and Parramatta Psychiatric Centres undertaking the Diploma in Psychiatric Medicine also attended.

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A diagnostic team visited Orange during October, 1971.

A well baby clinic was conducted by the centre's medical officers at Granville.

An OL class was established in Parramatta in October which the speech therapist visited weekly.

CABRAMATTA CHILD HEALTH CENTRE

In 1971 the total school population increased from 60,831 to 69,905 and the number of schools in the area rose from 98 to 121. The increase in population and schools resulted from a natural growth and the change of the centre's boundaries. Only 60 of the schools in the area were medically examined. This was partly due to the absence of one medical officer for four months.

Visits were made to 9 special schools and units in the area.

The number of preschool kindergartens rose from 12 to 16. Twelve of these preschool kindergartens were examined with the assistance of a medical officer from the Bureau of Maternal and Child Health. Two hundred and ninety medical examinations were carried out with 38 defects being notified.

One well baby clinic was conducted at Cabramatta where 233 examinations were carried out and 68 defects were notified.

The number of medical officer appointments at the centre increased from 706 to 875.

The hearing unit investigated 269 cases including 149 new cases.

The child guidance clinic case load for the year was 189 cases.

There were 2,071 individual attendances at the two speech therapy clinics. Speech therapists made 19 visits to schools for speech assessment.

Attendance continued at two Child Welfare Department institutions for immunization programmes.

No country diagnostic visit was made this year. This was due to staff shortages in the Department of Education in the Riverina Directorate.

Staff shortages were again experienced. Two sisters were absent on an inservice course for 12 weeks. Both psychologists resigned, leaving the centre without a psychologist for a month. One speech therapist was temporarily transferred from the centre for 3 months. However, during the year the senior speech therapist of the Bureau attended the centre and relieved the long waiting list for initial diagnostic interviews.

BLACKTOWN CHILD HEALTH CENTRE AREA

The building of the Blacktown Child Health Centre commenced in 1971.

Only a partial school medical service could be provided for the city of Penrith and Municipalities of Blacktown and Windsor.

The large number of defects notified compared to the total number of examinations carried out, is explained by the fact that due to limited staff, medical examinations were at times only carried out after screening by child health nurses. The high rate of defect notifications was thus due to a high number of children with suspected defects being referred for school medical examinations.

A hearing clinic for the area was conducted at Parramatta Child Health Centre.

A paediatric referral clinic was conducted weekly at Rooty Hill Baby Health Centre and weekly antenatal clinics and well baby clinics were held at Mt Druitt Baby Health Centre.

TABLE 3—CHILD HEALTH CENTRE AREAS

	Parramatta	Cabramatta	Blacktown
Number of schools	91	121	116
Number of schools examined	54	60	37
Children enrolled	45,400	69,905	54,400*
Full examinations	5,122	4,918	2,527
Review examinations	12,698	12,175	8,986
Defects notified	334	322	1,100

*Includes Government schools only.

In the Blue Mountains City Council area, the Campbelltown City Council area, Camden Municipality and in the Colo Shire the school medical service was carried out under the School Shire Scheme.

TABLE 4—SHIRE SCHEME SCHOOL MEDICAL SERVICE

	Camden	Campbelltown	Colo
Number of schools	9	25	17
Number of schools examined	5	12	11

DIVISION OF DENTAL SERVICES

The district establishment as at 31st December, 1971, was a Principal Dental Officer, eight Dental Officers, three Dental Nurses and eight Dental Assistants. Three Dental Officers, under Head Office administration, operate at Lidcombe Hospital, Silverwater Detention Centre and Parramatta Gaol. This is a net increase of three staff compared to 1970.

Three special projects were organized during the year:

(1) A geriatric survey, for the Dental Services Advisory Committee at Mowll and Woodbury Villages.

(2) A dental advisory service during "Health Week" for Campbelltown City Council.

(3) A pilot "Selfbrushing" preventive technique with the pupils of Mt Druitt Public School.

Minimal staffing problems have occurred and all services have been maintained throughout the year.

Transfer of the Blue Mountains City Council area to this district has added twenty-eight schools to the programme list. Two additional child welfare homes and Emu Plains Detention Centre are now in the district area.

TABLE 5—DENTAL SERVICES

Examinations (notifications)	24,953
Examinations (treatment)	11,205
New cases	6,402
Repeat cases	19,507
Total cases	25,909
Extractions	11,339
Fillings	25,143
Other treatments	25,654
General anaesthetics	131
Dentures	309
Denture repairs	98
Orthodontic appliances	24

HEALTH EDUCATION

The district was without the services of a health education officer from January to May. Miss P. O. Davies was appointed to the post at the end of May. She had completed a great deal of the preliminary work of gathering information for the revision of a Register of Social Services for the Western Metropolitan Health District when in October she became seriously ill and work in the Health Education field suffered a setback.

A second Health Education Officer was seconded to the District in August for the specific purpose of implementing a drug education programme. Two 5-day "workshops" were held in November and December for Teachers. Further programmes were planned for approved drug educators.

WESTMEAD TEACHERS' COLLEGE

A full-time medical officer was appointed to the Westmead Teachers College and a course in health education continued for the second year trainees.

The medical officer also undertook medical examinations for appointees to the Department of Education, and was available for medical consultations.

TABLE 6—WESTMEAD TEACHERS' COLLEGE

Total enrolment	350
Number of medical examinations	190
Number of health education lectures per week	5
Number of student visits for first-aid, medical advice, etc.	89
Number of student visits for counselling	343
Number of student visits for fitness to resume after sick leave	11
Number of staff visits for first-aid	32
Immunizations	54

ENVIRONMENTAL SANITATION

The residential areas of the district have continued to develop at a rapid rate bringing associated problems of drainage, sullage and garbage disposal. The Blue Mountains City area added a large developing residential area to the District.

Nightsoil and Garbage Disposal

Closer supervision of council garbage and nightsoil depots resulted in a general improvement in disposal standards, although some councils are still experiencing difficulty in properly covering garbage.

Generally nightsoil disposal has been satisfactory.

Sewage Disposal and Septic Tanks

A record number of septic tank applications, 3,342, were processed during the year, some 170 being received for Blue Mountains City during the last 2 months of the year. Three sewage treatment plants, 2 at institutions and 1 in a municipality were commissioned. In addition, a large plant designed to treat poultry abattoir wastes was completed.

There is a strong trend towards the installation of small sewage treatment plants at schools, colleges and institutions instead of septic tanks. This trend has been encouraged by this office and a number of discussions with various technical persons involved in sewage treatment have taken place.

Supervision of all sewage treatment plant in the district was maintained throughout the year.

Noxious Trades

A number of noxious trade premises were refused licences during the year for failing to meet the required standards. The previously instituted system of frequent follow-up inspections resulted in most premises being maintained at a higher standard. One trader was prosecuted for being unlicensed and unregistered pig-keeper. Five traders were successfully prosecuted for failing to cover loads of putrescible matter whilst being conveyed through public places.

Swimming Pools

Council operated swimming pools were visited regularly and routine field tests were carried out.

It was noted that a number of pools at Government hospitals and institutions were being inefficiently controlled and maintained.

In order to overcome this problem, the Senior Health Inspector arranged a 2-day course in pool operation and maintenance to which some forty persons, responsible for institutional pools attended.

General Activities

A number of lectures and field excursions were conducted by District Health Inspectors for the New South Wales College of Nursing and the Nursing Training School of Auburn District Hospital.

TABLE 7—WORK PERFORMED BY HEALTH INSPECTORS, 1971

Abattoirs	10
Barber shops	..
Caravan parks, recreation grounds, etc.	65
Crematories, local authorities	6
Consultations with local authorities officers	289
Consultations with professional people	102
Courses attended	9
Dog pounds	1
Institutions	15
Infectious and communicable diseases	6
Legal proceedings for Department—	
Fines	$260
Costs	$14
Lead poisoning investigated	1
Pig farms, poultry farms, dairies	150
Nuisance investigations	290
Noxious trade premises	340
River and stream pollution	23
Sanitary surveys	..
Shops and buildings	15
Schools inspected	16
Swimming pools	46
Sanitary depots	340
Septic tanks—	
Applications dealt with	3,342
Approved	3,066
Refused	143
Existing	75
Manufacturer's designs examined	..
Manufacturer's premises inspected	21
Sewage treatment works inspected	127
Samples—	
Water	112
Effluent	33
Trade waste and industrial disposals	173
Unhealthy building land	3

FOOD INSPECTION

Food poisoning reports have become more frequent. Subsequent investigations have revealed shortcomings in food legislation. Lack of knowledge by caterers and food handlers in regard to bacterial contamination is also evident. In one case a large number of persons became ill following a banquet. Inspection revealed that the caterer had completely inadequate refrigerated storage space and other facilities. Food, including cooked chicken, for several hundred people was prepared at least 24 hours prior to the dinner. A converted double garage at the rear of a domestic residence was used by the caterer. Caterers are not required to be licensed by any health authority.

No legislation exists to require refrigeration in such a situation.

TABLE 8

Milk samples—			
Number taken	432		
Number below standard	8		
Number of warnings	2		
Number of prosecutions completed	2		
Amount of fines and costs	$146		
Food samples—	Meat	Other	Total
Number taken	810	195	1,005
Number below standard	273	22	295
Number of warnings	154	10	164
Number of prosecutions completed	115	4	119
Amount of fines and costs	$6,313	$326	$6,639
Seizures—			
16 tons 1 cwt 48 lb.			
121 packets.			
Premises—			
Number of inspections	1,901		
Number of warning notices	240		
Number of prosecutions completed	7	Local Government Act	3
Amount of fines and costs	$974	..	$136
General breaches—			
Number of prosecutions completed	36		
Amount of fines and costs	$1,408		
Other matters—			
Number of complaints received and investigated	454		
Number of inspections—Departmental hospitals	4		
Number of inspections—Government institutions	14		
Number of interviews and advisings	365		
Number of field tests—Meat	1,408		
Number of field tests—Liquor	920		
Total prosecutions completed	167		
Total fines and costs	$9,303		

NEWCASTLE HEALTH DISTRICT

Location: 2 Market Street, Newcastle, 2300

Medical Officer of Health: Dr B. M. Nolan, L., L.M., R.C.P. & S.I., D.P.H., F.A.C.M.A.

STAFF

1 Medical Officer of Health.
1 Deputy Medical Officer of Health.
1 Assistant Medical Officer of Health.
1 Psychiatrist.
2 Psychologists—1 part-time.
2 Social workers.
1 Speech therapist—1 part-time.
1 Senior School Medical Officer.
4 School Medical Officers—1 part-time.
7 School Nurses.
1 Senior Food Inspector.
1 Food Inspector.
1 Senior Health Inspector.
4 Health Inspectors.
1 Assistant Nurse Inspector.
5 Tuberculosis Nurses.
25 Baby Health Centre Sisters.
1 Engineer, Clean Air Act, 1 Technical Officer.
1 Clerk.
1 Shorthandwriter Typist.
1 Typist.
3 Office Assistants.

THE DISTRICT

The Newcastle Health District, established in 1898, includes the cities of Greater Cessnock, Newcastle, and Maitland, the Municipalities of Kempsey, Muswellbrook, Port Macquarie, Singleton, Taree, and Wingham, the Shires of Dungog, Gloucester, Gosford, Hastings, Lake Macquarie, Macleay, Manning, Merriwa, Patrick Plains, Port Stephens, Scone, Stroud and Wyong. It extends from the Hawkesbury River in the south, to the northern boundary of the Macleay Shire, where it meets the North Coast Health District. The Western and North Western Health Districts form the inland boundary.

COMMUNICABLE DISEASES

TABLE I—NOTIFIED COMMUNICABLE DISEASES AND DEATHS, 1970–1971

	1970		1971	
	Cases	Deaths	Cases	Deaths
Brucellosis	4	..	2	..
Diphtheria	..	..	6	1
Encephalitis viral	6	..	6	..
Diarrhoea (infantile)	37	1	17	8
Hydatid disease	..	..	2	2
Infectious hepatitis	312	1	247	..
Leptospirosis	..	..	1	..
Malaria	3	..	5	..
"Q." fever	1	..	7	..
Tetanus	2	1	..	..
Tuberculosis	58	..	65	..
Syphilis	9	..	1	..
Gonorrhoea	138	..	176	..
Total	570	3	535	11

The number of notifications of infectious hepatitis was considerably less than that of the previous 2 years, whereas notifications of gonorrhoea showed an increase.

Following 2 clear years there were six cases of diphtheria notified in children, with two deaths. The community was made aware of the situation in an attempt to improve its immunization status.

A minor epidemic of "Q'.' fever occurred in an abattoir. Concurrent cases of infectious hepatitis led to some initial difficulty in differential diagnosis.

PURE FOOD ADMINISTRATION

The general standard of food premises has improved.

During the year one cafe proprietor was fined $500 for a second offence, in failing to keep his premises clean, and has now sold out. This cafe is now in excellent condition and is well-maintained by the new proprietors.

A new public bar has been built at Maitland Showground, to replace a dilapidated structure.

Many improvements have been made to showgrounds throughout the district.

Special attention has been paid to all food processing equipment, and also to food handling procedures, such as in delicatessens, and a number of warning and advisory letters have been sent by the Medical Officer of Health.

Food hygiene talks have been given to many organizations and to the staff of business houses. A Food Hygiene course of twelve lectures is to be conducted for the first time this year at Newcastle Technical College. It is expected that the key personnel of most food firms will participate, and that they will sit for an examination, success in which, is to be rewarded by the issue of a certificate of competency.

Liaison has been maintained with all the health officers of Local Government throughout the area, and advice and assistance given whenever requested.

TABLE II—PURE FOOD INSPECTIONS, SEIZURES, PROSECUTIONS AND FINES, 1970–1971

	1970	1971
Milk samples—		
Number of milk samples taken for analysis	6	19
Number of samples below standard	..	..
Number of warnings issued	..	..
Number of prosecutions	..	..
Amount of fines and costs	..	..
Food and drugs (other than milk)—		
Number of samples taken for analysis	492	533
Number of samples below standard	92	63
Number of warnings	32	24
Number of prosecutions	60	39
Amount of fines and costs	$1,672.50	$1,407
Seizures—		
Quantity of food and drugs unfit for human consumption seized and destroyed	10,702 lb.	11,125 lb.
Premises—		
Number of inspections of premises (food and drug)	788	833
Number of notices served	127	131
Number of prosecutions for unclean premises	4	3
Amount of fines and costs	$758	$758
General breaches of the Act and Regulations—		
Number of prosecutions	..	3
Amount of fines and costs	..	$236
Other matters—		
Number of complaints investigated	80	115
Inspections of departmental hospitals	12	12
Inspections of Child Welfare and Prisons	4	5
Meat samples tested	450	1,520
Spirit samples tested	110	150
Food and health education talks	16	22

ENVIRONMENTAL HYGIENE

Water supplies were the subject of constant surveillance during the year and on a number of occasions it was necessary to advise local authorities concerned that the public should be notified to boil all water for domestic use.

A conference was held with executive officers of one authority to discuss the supply, due to repeated samples indicating faecal pollution.

Fluoridation of the Taree supply commenced and a major portion of the Hunter District Water Board supply was also fluoridated.

A number of meetings was held of the Water Pollution Advisory Committees for both the Hunter River and Lake Macquarie.

Pollution to the Hunter River by the discharge of domestic wastes from heavy industries has been further reduced, by the installation of sewage treatment plants, a total of five plants operating.

In conjunction with local authorities a continuing survey of the waters of Lake Macquarie was conducted and sources of possible pollution established.

A number of sites for proposed sewage treatment plants were considered and the poor quality of effluent from other plants was drawn to the attention of the authorities concerned.

The poor condition of a public school was brought to notice, particularly with regard to bad sanitation, following the notification of a case of diphtheria. Appropriate action was taken by the Department of Education.

TABLE III—ENVIRONMENTAL HYGIENE INSPECTIONS, 1970–1971

	1970	1971
Complaints—		
Ministerial	35	..
Head Office	52	42
Local	341	309
Barber Shops	18	26
Beach Pollution—		
Investigations	14	20
Reinspections	38	56
Water Supplies—		
Investigations and surveys	18	22
Inspections	54	84
Water samples	120	90
Noxious trades—		
Licenses issued	21	21
Inspections	320	299
New premises	23	4
Unhealthy building land—		
Proposed proclamations	3	1
Site inspections	43	30
Sanitary surveys—		
Inspections	1	1
Public School Inspections	6	4
Public Health Act—		
Inspection of dwellings	26	34
Other premises	108	152
Sewerage—		
Proposed plant sites	18	14
Inspection—private treatment plants	20	30
Inspection—treatment plants	75	98
Inspection—existing disposal sites	80	129
Samples collected	50	40
Septic Tanks—		
Approved	4,004	4,005
Refused	51	137
Inspection—existing tanks	510	719
Swimming pools—		
Inspections	56	48
Samples	4	3
Private schools	..	2
Sanitary Depots—		
Proposed nightsoil	10	26
Proposed garbage	24	48
Inspections	340	388
Camping Reserves—		
Inspections	88	106
Water samples	36	40
Public Amenities—Parks—Reserves	280	219
Institutions—		
Government and aboriginal reserves	16	16
Abattoirs—		
Inspections	21	15
Effluent disposal	21	15
Samples	12	9
Cemetery site inspections—		
New	1	1
Existing	18	25
Crematoriums—		
Proposed sites	1	1
Inspections	6	12
Hunter River Pollution Advisory Committee meetings	3	3
Investigations	30	26
Lake Macquarie Pollution Advisory Committee meetings	1	4
Investigations	20	48

TUBERCULOSIS CONTROL

TABLE IV—TUBERCULOSIS CONTROL WORK, 1970–1971

	1970	1971
Clinic Sessions	720	785
Total Attendances	14,722	13,228
Home Visits	3,051	1,031

MATERNAL AND CHILD HEALTH

1. Maternal and Infant Care

TABLE V—ATTENDANCES AT BABY HEALTH CENTRES AND VISITS TO HOSPITALS AND HOMES, 1970–1971

	1970	1971
Total number of centres	63	62
Total attendances	117,207*	130,375*
Under 1 year	103,555	115,860
Over 1 year and under 2 years	8,118	9,981
Over 2 years	3,894	4,534
Babies attending for First Time—		
Under 1 year	8,543	9,116
Over 1 year and under 2 years	..	147
Over 2 years	..	19
Total	..	9,282
Home Visiting—		
First visits	2,570	1,884
Subsequent visits	1,617	1,026
Not seen	..	928
Total	..	3,838
Number of mothers seen in hospital	3,984	4,891
Total time spent home visiting	2,590	2,241
Total number of individual babies	16,821	18,492
Total number of days centres closed due to public holidays, Bank Holiday and other reasons	..	282
Royal Newcastle Hospital Well Baby Clinic—		
Total attendances	..	1,297
Total new borns	..	235
Total number of home visits	..	283
Total number of hours home visiting	..	167
Total number of mothers visited in hospital	..	1,110
Premature babies notified from Royal Newcastle Hospital for Home Visiting—		
Premature babies—first visits	..	15
Subsequent visits	..	13
Prenatal clinics—total number, 2—		
Number of clinics held	..	97
Primiparae—First visits	..	16
Primiparae—Second visits	..	84
Multiparae—First visits	..	50
Multiparae—Second visits	..	394
Postnatal examinations	..	24

* Includes miscellaneous attendances.

INSPECTIONS AND INTERVIEWS BY DISTRICT NURSING SUPERVISOR IN REGARD TO BABY HEALTH CENTRES

	1970	1971
Number of inspections of baby health centres	50	48
Number of inspections of baby health centre sites	..	3
Number of inspections of baby health centres under construction	..	..
Number of interviews with local authorities	..	4
Number of interviews with applicants for vacancies	..	10

Proposed new baby health centres have been under consideration for Toukley, Edgeworth and Merriwa.

Considerable housing development is in progress in the following areas which will necessitate the local Councils to consider the need for the provision of Baby Health Centres in the near future:—

Warners Bay, the new subdivision proposed for Charlestown, Belmont North, Wallsend, Barnsley, Edgeworth, East Maitland, Woodford, Beresfield.

Large commercial firms are decentralizing into these areas bringing with them accompanying community services. The type of homes are both private dwellings and Housing Commission.

It has become obvious the staff establishment allotted to this District will need to be extended to allow for the appointment of a second permanent recreation officer, employment of 2/5th unit for The Entrance-Woy Woy Baby Health Centre, assistance for the District Nursing Supervisor, and extension of several existing baby health centre services.

Great difficulty has been experienced in maintaining normal services in Baby Health Centres throughout the Health District. The situation became so acute this year that services had to be restricted, centres closed, causing reduced attendances at all Centres.

Unfortunately no nominations could be made for members of the staff to be included in the two In-service Training Courses conducted by the Department.

Baby Health Centre Sisters in certain areas assisted medical officers to perform rubella vaccination in schools.

The Psychiatric Mental Health Clinics continue to operate in the Gosford and Cessnock Baby Health Centres. This service has now extended to the Toronto Baby Health Centre one day each week, and appears to be well accepted by the surrounding community.

Pre-natal services are still conducted at two baby health centres, Charlestown and Cardiff.

Sabin feedings are being held in 29 Baby Health Centres throughout the Health District, with a total of 21,138 feedings being given. These clinics are being conducted by the sister-in-charge of the centre with little or no assistance from Council.

The Well Baby Clinic, Royal Newcastle Hospital continues to function but on a reduced basis, the present service being 2 half-days per week, Tuesday and Thursday, 9 a.m. to 1 p.m., due to the decreasing numbers attending the Clinic.

2. Child Health

TABLE VII—SCHOOL MEDICAL SERVICE

	1970	1971
Number of schools	496	530
Departmental scheme	165	204
Number of these examined	162	202
Shires scheme	331	326
Number of these examined	138	111
Full examination by medical officers	13,740	14,538
Review examinations by medical officers and nurses	17,529	21,077
Review examinations mainly conducted by nurses	3,855	6,379
High school review examinations—		
Not referred to medical officers	9,478	9,261
Referred to medical officers	498	539

The school medical personnel throughout the year has been fully staffed comprising three teams of one doctor and two nurses. In addition to these a part-time medical officer has been working in the schools for 2 days with one sister.

The programme of medical inspections has included all schools in the Greater Newcastle/ Maitland area and was extended to all schools in the Port Stephens Shire area and small schools in the outlying Cessnock, Maitland and Lake Macquarie Shire areas. Also, by request, medical inspections in private preschool kindergartens were included in the programme.

The number of children seen at the child health centre in 1971 was similar to the number seen in 1970. The number of referrals was increased especially in the educational/special learning problem fields. This occasioned a longer waiting list for initial interview and an even longer wait for psychological assessment except in urgent cases.

Child health centre clinical work is undertaken on 1 day per week and 5 days during the school holidays by the three full-time school medical officers. The part-time medical officers spend 2 days and 1 day in the Centre. The senior medical officer consults throughout the week. All medical officers attend the weekly "case conference" with the child guidance staff, to continued advantage.

There has been no hearing clinic since 1967. Audiometry was performed on 1,124 children, many referrals coming from the school teachers and local general practitioners. Children with abnormal audiograms are examined by a medical officer and referred back to the general practitioner or to the Commonwealth Acoustic Laboratory.

The child health centre has continued to accommodate a preschool class for profoundly deaf children with the Education Department teacher attending two days per week.

In 1971 the five association kindergartens in the Newcastle area were inspected and it was possible to extend the service to five private preschool kindergartens.

All subnormal schools in the Newcastle area were inspected in 1971. All children in special classes were seen during the yearly inspection of their schools and contact and occasional visits were made throughout the year by the school doctors and nurses.

The two O.L. classes were visited weekly by a speech therapist.

3. Child Guidance Clinic

The child guidance clinic staff has comprised one part-time psychiatrist working 1½ days per week, two full-time psychologists and one part-time consultant clinical psychologist, and one social worker.

Students enrolled in the university diploma course in Clinical Psychology were accommodated in the child health centre for instruction in psychological assessment and therapy to mutual benefit. Lectures to the students were given by the child health centre staff.

4. Speech Therapy Clinic

In 1971, as in previous years, referrals to the speech therapy clinic have comprised a large percentage of children in attending the child health centre. There were two speech therapy clinics for the greater part of the year, but only one for the latter part.

Once again case loads for therapy have been limited to urgent and severe cases because of the commitment to the two language classes, but all cases are interviewed, assessed and if necessary referred to the other clinics or put on the waiting list for therapy.

PRIVATE HOSPITALS AND REST HOMES

TABLE VIII—INSPECTIONS OF PRIVATE HOSPITALS AND REST HOMES, 1970–1971

	1970	1971
Inspections of Private Hospitals	16	11
Inspections of Nursing Homes	54	30

Prior to this year, 34 Nursing Homes with accommodation for 1,056 beds were licensed. There are now 2 additional newly constructed Nursing Homes, making a total of 36 with a bed capacity of 1,283 which is an increase of 227 beds over the previous year.

Private Hospitals—in all there are 13 with accommodation for 319 beds, 17 cots. Plans for 2 new buildings for proposed private hospitals have been approved by the Board of Health, one of which is at present under construction and will have a bed capacity of 110 beds.

There has been considerable activity in the existing licensed premises:

Nine licensees have sought amendment to their licenses.

Eight licensees sought approval for alterations and additions.

Three licensees sought approval for trasnfer of license.

Generally speaking, since March, 1972, the emphasis has been on administration of the present Nursing Homes and Private Hospitals, due to a lapse of 12 months prior to the appointment of a replacement for the position of District Nursing Supervisor.

Priority has had to be given to urgent matters in this section, necessitating everything being handled on a day-to-day basis. This situation has settled somewhat.

Routine inspections of Private Hospitals and Nursing Homes have not been possible up to this date. However, all Private Hospitals and Nursing Homes in this Health District have been inspected by the District Officer of Fire Brigades, Sydney. This has resulted in financial problems for many licensees; nevertheless, their co-operation has been good and the general standard of their premises has been upgraded considerably. Where possible, joint inspections have been made by two Officers of this Department and an Officer from the Board of Fire, Sydney. This proved an excellent arrangement, most supportive to all concerned.

The Commonwealth Health Department has been very co-operative and supportive, with a good liaison being established.

SOUTH COAST HEALTH DISTRICT

Headquarters: 4th Floor, A.M.P. Building, 166 Keira Street, Wollongong. Phone: 28 8699

Medical Officer of Health: Dr E. C. Wallace, M.B., B.S., D.P.H.

Deputy Medical Officer of Health: Dr C. E. Vaughan, M.B., B.S., D.P.H.

STAFF

3 School Medical Officers (full-time); 1 School Medical Officer (part-time); 1 Shires Medical Officer (full-time); 1 Full-time Medical Officer (Wollongong Teachers College); 1 Part-time Medical Officer (Wollongong Teachers College); 1 Forensic Medical Officer; 1 Senior Health Inspector; 3 Health Inspectors; 1 Senior Food Inspector; 1 Food Inspector; 1 Health Education Officer; 3 School Nurses; 4 Tuberculosis Sisters; 1 Assistant Nurse Inspector; 2 Speech therapists; 11 Permanent Baby Health Centre Sisters; 8 Temporary Baby Health Centre Sisters; 2 Part-time Baby Health Centre Sisters; 1 Clerk; 1 Air Pollution Engineer (Clean Air Act); 1 Technical Officer (Clean Air Act); 4 Full-time Office Assistants; 1 Part-time Office Assistant; 1 Social Worker; 1 Operator/Receptionist (Chest Clinic).

There were the following changes in staff during the year: Four transfers, seven resignations and eleven additions to the staff. Two vacant positions remained unfilled.

DISTRICT

The district extends from Helensburgh in the north to the Victorian border in the south, and to the Tablelands to adjoin the Australian Capital Territory. The district comprises the following local authority areas:

Municipalities: Bega, Bombala, Bowral, Cooma, Goulburn City, Kiama, Shellharbour, City of Wollongong, Queanbeyan.

Shires: Bibbenluke, Crookwell, Eurobodalla, Gunning, Imlay, Mittagong, Monaro, Mulwaree, Mumbulla, Shoalhaven, Snowy River, Tallaganda, Wingecarribee, Wollondilly, Yarrowlumla.

VITAL STATISTICS 1971

Population.—The population of the district at 30th June, 1971, was 353,523 (preliminary census figure).

Live-births.—There were 7,872 live-births equal to a rate of 22·27 per 1,000 of population.

Deaths.—Deaths numbered 2,735, equivalent to a rate of 7·74 per 1,000 of population.

Infantile mortality.—Deaths under one year of age numbered 133 equivalent to a rate of 16·90 per 1,000 live-births.

Of the total number of deaths of infants under one year of age 95 occurred within one week of birth and 102 within the first month. The corresponding rates per 1,000 live-births for the two-age groups were 12·07 and 12·96 respectively.

Still-births.—There were 95 still births equal to a rate of ·27 per 1,000 of population and representing 11·92 per cent of all births (live and still).

COMMUNICABLE DISEASES

TABLE I—NOTIFICATION OF COMMUNICABLE DISEASES AND DEATHS—SOUTH COAST HEALTH DISTRICT 1970–1971

Disease	1970		1971	
	Case	Death	Case	Death
Brucellosis	1	..	3	..
Diphtheria	..	..	3	..
Encephalitis	1	1	..	..
Hydatid disease	7	..	5	..
Infantile diarrhoea	10	1	5	2
Infectious hepatitis	335	3	328	2
Malaria	1	..	2	..
Ornithosis	1	..	1	..
Typhoid fever	..	..	1	..
Syphilis	1	..	3	..
Gonorrhoea	58	..	76	..
Tuberculosis	48	..	37	..

Diphtheria

A 12-year-old boy, an inmate of a children's home, was notified on clinical grounds as laryngeal diphtheria, a tracheotomy being done. Cultures from specimens taken failed to grow *C.diphtheriae* however. Throat swabs from household contacts were also negative. Booster doses of PTAP dil. were given to those insufficiently immunized.

Infectious Hepatitis

Notifications were high for Shoalhaven Shire (54) and notifications for Shellharbour Municipality continued to be relatively high especially in the Warilla area.

TABLE II—INCIDENCE OF INFECTION IN SOUTH COAST HEALTH DISTRICT (INFECTIOUS HEPATITIS)

Area	Cases reported	
	1970	1971
City of Wollongong	119	123
Municipality of Shellharbour	149	95
Rest of South Coast Health District	67	110

Typhoid

In February, the Division of Epidemiology informed this office that a 19-year-old female who had spent her honeymoon down the South Coast within the incubation period was admitted to Hornsby District Hospital with S. Typhi infection.

This information initiated an extensive carrier search among food handlers in various eating establishments along the South Coast. Thirty-six food handlers had stool and urine cultures. A 62-year-old restaurent proprietress was found to be excreting *S. Typhosa* organisms.

She was given appropriate treatment as a typhoid carrier and is now under surveillance.

One case of acute typhoid fever was notified to this office in May. This was a 12-year-old daughter of a Wollongong hotel proprietor. No meals were served at the hotel and food preparation was restricted to two persons.

Serial stool cultures of six members of the family and five members of staff were negative. An uncle and maternal grandmother in Sydney were also tested and found negative.

The patient had also consumed some oysters from Shoalhaven Heads within the incubation period of the disease. A sample of oysters from this source were subsequently cultured and found to be negative.

IMMUNIZATION

Sabin Vaccine

Doses issued to councils during 1971—21,920.

Rubella

Girls in the eligible age group in metropolitan Wollongong were vaccinated by a team from Sydney.

2,649 girls in High School outside Wollongong and in Dapto High School were immunized by staff from this Office.

Tetanus

Fifty-seven Tetanus toxoid injections have been given to staff of the Department of Agriculture in Nowra, Bega, Cooma, Queanbeyan, Goulburn, and Moss Vale.

Smallpox

Twenty-tow Ambulance station staff were vaccinated against smallpox by staff from this Office.

The twenty-two persons vaccinated were located at the following centres: Nowra, Ulladulla, Bateman's Bay, Moruya, Bermagui, Narooma, Bega, and Eden.

ENVIRONMENTAL HEALTH

TABLE III—ROUTINE INSPECTIONS AND INVESTIGATIONS SOUTH COAST HEALTH DISTRICT—1970–71

	1970	1971
Water samples taken—		
Drinking	220	388
Sewerage	30	4
Beach pollution	30	7
River and lake pollution	70	16
Swimming pools	12	19
Water inspections—		
Catchment areas	8	13
Chlorination plants	4	6
Fluoridation plants	10	6
Reservoirs	6	3
Filtration plants	3	3
Sewerage works—		
Proposed	4	9
In operation	30	31
Effluent disposal	30	31
Tipping station	..	..
Institutions and aboriginal settlements—Inspection	8	8
River polution—Surveys	12	14
Beach pollution—Surveys	8	2
Investigation of infectious diseases	8	..
Dwellings (under Public Health Act)	12	2
Noxious trades—		
New premises	1	1
Reinspection	90	73
Sanitary depots—		
Proposed	3	9
Inspections	96	102
Vehicle inspection	20	24
Camping reserves—Inspections	70	62
Alpine lodges	15	33
Migrant hostels	1	..
Septic tank inspections—		
Refused	44	34
Processed	2,487	2,727
Tank inspections	220	120
Site inspections	1,506	1,600
Septic tank manufacturing	10	10
Complaints dealt with	86	88
Barber shops—Inspections	22	18
Surveys on behalf of local authorities	..	3
Council committees addressed	3	3
Slaughtering premises inspected—		
Meat	30	4
Poultry	3	2
Poultry abattoirs—Waste disposal	6	2
Scavenging districts investigated	5	..
Unhealthy building land inspections	8	12
Cheese factories	7	8
Funeral parlours	4	4
Licensed premises	10	73
Lodging premises	..	7
Shop premises	80	71
Skin and hide premises	6	2

Comment

Flood rain early in 1971 caused damage to Far South Coast water supplies and departmental officers carried out a great deal of supervisory work in conjunction with provision of emergency supplies.

During the emergency departmental officers, in conjunction with the RAAF set up a mobile field testing unit to determine purity of the emergency water supplies.

A major systematic investigation into suggested pollution of the Murrumbidgee River and Burrinjuck Dam from the A.C.T. sewerage treatment works was carried out over a period of 5 months.

The work and investigation in this project was most expensive and caused staffing shortages for carrying out of other investigations.

Investigation in suggested overcrowding and inadequate liquid waste disposal in Alpine regions was continued: resulting in conference with officers of National Parks and Wildlife Service. This investigation is continuing.

PURE FOOD WORK

TABLE IV—SHOWING SAMPLING, SEIZURES, PROSECUTIONS, INSPECTIONS ETC., 1970–71

	1970	1971
Milk samples—		
Number of milk samples taken for analysis	25	25
Number of samples below standard	1	2
Number of warnings issued	1	..
Number of prosecutions	..	2
Amount of fines and costs	..	$144
Food and drug samples—		
Number taken	574	463
Below standard	85	53
Warnings	54	30
Number of prosecutions	95	78
Fines and costs	$3,476	$3,918
Food samples field tested—		
Meat	880	575
Spirits	4,140	5,908
Seizure of food—		
Quantity (in lb)	147	..
Premises—		
Number of inspections (food and drug premises)	1,932	1,853
Number of notices issued	524	557
Prosecutions	3	8
Amount of fines and costs	$256	$842
General breaches—		
Prosecutions	45	93
Amount of fines and costs	$981	$2,722
Action under other Acts—		
Prosecutions	..	..
Fines and costs	..	..
Other matters—		
Complaints investigated	147	151
Enquiries, interviews and advisory services	822	720
Inspections of departmental hospitals	2	2
Inspection of child welfare and prison estates	7	7
Prosecutions recommended	143	181
Total fines and costs	$4,713	$7,626

Comment

Mr B. Wells, Food Inspector was transferred to Western Metropolitan Health District in March and was replaced by Mr P. Young, an inspector new to pure food work. This resulted in more time being consumed in the training of the new inspector and this meant a slight drop in the number of food samples purchased, and inspections carried out. However, the number of prosecutions completed and warning notices issued, increased, and in other respects the work performed was similar to that of last year. During the year an intensive campaign was carried out to have adequate and separate washing facilities for appliances and hands installed in all food premises, including pharmacies. During December the staff of the Pure Food Branch consisted of only the senior inspector following the transfer of Mr Young to head office.

TUBERCULOSIS

TABLE V—SUMMARY OF WORK CARRIED OUT AT CLINICS DURING 1971

	Wollongong	Nowra	Goulburn	Moruya	Bateman's Bay	Bega	Cooma	Picton	Bowral	Queanbeyan	Total
Total attendances	12,070	479	1,111	77	21	248	162	424	31	274	14,897
Proven Pulmonary TB	797	63	32	7	4	26	7	30	3	18	987
Proven Extra Pulmonary TB	33	..	..	1	..	1	4	..	..	2	42
Inactive TB (all forms)	1,478	97	144	22	5	66	43	61	16	91	2,023
Newly notified TB (all forms)	35	..	3	..	..	2	..	..	1	3	44
Contacts	3,125	226	313	25	1	133	42	153	6	17	4,041
Others	6,602	92	619	22	11	20	66	180	5	143	7,760
Number of X-rays											
(a) TB	2,037	154	492	..	10	212	103	89	30	104	3,231
(b) Non-TB	6,120	201	..	..	..	..	..	123	..	41	6,485
Bacteriological Investigation	3,465	..	57	..	4	33	58	..	9	24	3,650
Other Services	905	4	221	..	..	62	107	..	10	144	1,453
Cases Notified by Clinic	36	..	3	..	..	1	..	..	4	3	44
Visits	2,605	88	49	..	..	15	..	35	6	3	2,801

Comment

In February, Dr K. Harris, Director of Tuberculosis, in company with the Medical Officer of Health visited all Chest Clinics in the district to up-date Chest Physicians, Clinic Sisters, hospital executive officers and Matrons on anti-tuberculosis procedures, especially with relation to expenditure of Commonwealth funds.

As an outcome of Dr Harris' visit, Dr S. W. Banks was appointed as chest physician to the Bega Clinic, and a new clinic (conducted monthly) was opened at the Berrima Hospital Bowral with Dr G. R. Lucas as chest physician.

Many people find it difficult to get away from work to attend the Wollongong Clinic during normal hours of opening (9 a.m.–5 p.m.). Action is being taken to open an evening clinic once weekly.

There has been a considerable increase in tuberculosis work in the far southern and south-western parts of the District. In November, 1971, an Aboriginal child living at Wallaga Lake Reserve was admitted to the Far West Home at Manly. She was found to have radiological evidence of tuberculosis. This initiated a skin test survey of all families at Wallaga Lake and of children at the school attended by the patient. As a result two more children were admitted to hospital. Great assistance was given to the tuberculosis sister in this survey and follow up work by the newly appointed community health nurse (Aboriginal Welfare) stationed at Narooma.

In the latter half of the year four active cases of pulmonary tuberculosis were notified in the Southwestern Area and admitted to Canberra Hospital. Extensive contact checking was done over a wide area. Great assistance was given by hospital's staff.

MATERNAL AND CHILD HEALTH

1. Maternal and Infant Care

The workload on the staff of this section continues to increase, with insufficient staff to adequately cope with it.

TABLE VI—ATTENDANCES AT BABY HEALTH CENTRES HOSPITAL AND HOME VISITS

	1970	1971
Number of Baby Health Centres	53	52
Total attendances	90,476	100,580
Under 1 year	79,678	89,568
Over 1 year under 2 years	7,791	7,866
Over 2 years	3,007	3,146
Total babies attending for first time	7,222	7,253
Under 1 year	6,203	7,035
Home visiting		
Total time spent home visiting	3,030	2,933
Number of first visits	1,720	4,799
Number of subsequent visits	4,421	3,543
Number of mothers seen in hospital	5,037	4,840
Number of individual attendances at centres	13,381	14,876

The district was without the services of an assistant nurse inspector from February to mid-November. Four routine inspections of centres were made.

Services have been curtailed during the rostered recreation leave of the sister-in-charge in the following circuits—Bega, Goulburn, Bateman's Bay.

Service has been adversely affected also by the following events:

(i) There has been increased utilization of services without any increase in staff, and in fact since February, 1971, staff has been decreased by 2/5 unit.

(ii) No temporary relieving sister is available at present in Wollongong to replace sisters on recreation leave.

(iii) There has been more frequent need than in previous years to relieve country circuits from Wollongong (instead of Sydney).

These factors have meant a substantial reduction in time available for Hospital and Home Visiting which is reflected in the figures.

There is increasing need for additional staff in the Wollongong area and for a full-time relieving Sister.

The Annual Conference on Child Health was held at Port Kembla Hospital on 29th October, and was attended by the Director of the Bureau of Maternal and Child Health and by the Nurse Supervisor. Speakers were Dr Alan James (paediatrician); Dr Brian Willis (psychiatrist) and Miss Judith Watkins (social worker).

2. School Medical Service

The School Medical Service has been incompletely staffed. One officer (2/5 school medical, 3/5 teachers college) was granted leave to attend the Diploma of Public Health course.

Until June, two medical officers were available, when one resigned. A second medical officer took up duty in August and a part-time medical officer (3/5) gave assistance between September and December.

A full-time officer was appointed in September to undertake school medical examinations in the South Coast Health District, outside metropolitan Wollongong. This is a new position.

No medical officer was appointed to the Goulburn Teachers' College and as a result no school medical service was provided in Goulburn in 1971.

The following table summarizes the work performed:

TABLE VII—MEDICAL EXAMINATIONS IN PRIMARY SCHOOLS

A. Wollongong, Shellharbour, Kiama

Year	Number of Schools	Schools Examined	Children enrolled	Full exam	Review exam	Total exam	Defects notified
1970	81	70	30,592	7,038	9,158	16,196	1,912
1971	83	62	32,869	4,233	6,269	10,502	1,226

B. Performed in shires and minicipalities

1970	187	117	22,736	3,911	4,719	8,630	2,454
1971	188	114	20,202	4,419	6,166	10,585	2,389

TABLE VIII—MEDICAL EXAMINATIONS IN HIGH SCHOOLS

A. Wollongong, Shellharbour, Kiama

Year	Number of schools	Schools examined	Children enrolled	Reviews not referred MO	Reviews referred MO	Total exam	Defects notified
1970	20	20	16,079	5,383	498	5,881	355
1971	21	20	16,622	6,214	363	6,577	275

B. Performed in shires and municipalities

1970	31	22	11,693	2,794	358	3,152	332
1971	35	20	13,077	2,770	246	3,016	483

3. Special Services

(a) Speech Therapy

The volume of work done at the Wollongong Speech Therapy Clinic has been adversely affected by understaffing during the year. Two speech therapists resigned, one in March the other in August, and there was no replacement till September. From that month to the end of the year the clinic was staffed by one full time therapist. The depots formerly operated on a fortnightly basis at Nowra and Moss Vale had to be discontinued early in the year. Twice weekly visits to the "opportunity language" class at Berkeley Infants School continued throughout the year.

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TABLE IX—SUMMARY OF WORK PERFORMED AT ALL CLINICS

	1970	1971
Number of Initial Interviews	230	158
Number of Individual Attendances	2,430	1,590

(*b*) *Atypical Children*

Meetings at Wollongong Hospital continued to be held monthly of representatives from the School Medical Service, Division of Guidance and Adjustment, Department of Child and Social Welfare, Psychiatric Department (Wollongong Hospital), Paediatricians, Speech Therapists, Social Workers, Principal of Greenacres Special School, Matron and Welfare Officer of the Illawarra Children's Hospital and others associated with atypical children.

Excellent liaison has developed between all departments and staff dealing with atypical children.

Sixty cases were discussed during the year, fourteen of whom remain under the surveillance of the meeting.

(*c*) *Hearing Clinic.*

Still under suspension as no consultant has been appointed.

SOCIAL WORK

The new position of social worker was filled in June, 1971. The social worker had previously been employed at the local psychiatric unit and continued his involvement in Community Social Welfare. It was expected that the Social Worker would work mainly with Baby Health Sisters, but because of lack of Child Guidance facilities, he has in fact accepted referrals from many sources. Referrals to the end of the year were:

Referred by:	
Hospital	1
Paediatrician	3
Psychiatrist	3
Baby health sisters	11
School Medical Service	3
Medical officer of health	7
Speech therapist	2
Voluntary agencies	4
Miscellaneous	8
	42
Cases closed	20
Active at 1st January, 1972	22

During the period the social worker conducted 90 office interviews and made 121 home visits.

Other activities of the social worker included work with the local Marriage Guidance Council; Civil Rehabilitation Council; Birthright; Psychiatric Rehabilitation Association; N.S.W. Council for Intellectually Handicapped Children; Steering Committee of Family Planning Association and attendance at monthly child health conference. He also participated in the monthly and annual meetings of the Baby Health Centres Sisters.

The social worker attended a Drug Education Workshop and subsequently participated in five Drug Education programmes.

In September, 1971, the Social Worker gave a talk to the Lakelands Mother's Club on "Social Work with Problem Parents".

ABORIGINAL WELFARE

Sister J. Biddulph, community health nurse for Aboriginal welfare, took up duties in June, 1971, with headquarters at Narooma. Her area of work extends from Bateman's Bay to Cobargo and contains some 83 Aboriginal families (so far recorded) with a total Aboriginal population of 491 (adults and children).

Home visiting was carried out on a fairly regular basis. All schools in the area were contacted and health education material and advice given. Doctors, hospitals, various government departments and voluntary organizations working with Aborigines were also contacted.

Home visiting has covered a wide variety of subjects mainly questions on social services, general welfare, education, health and maintenance.

Main employment is at sawmills, fishing, seasonal picking such as peas and beans. Many families are on social service benefits. Families wherever possible have been encouraged to join a medical and hospital benefits fund and this has entailed a great output of time.

Parents have been encouraged to have their children immunized, but few have done so. Mothers have been encouraged to take their babies to the baby health centres. Some have attended.

Generally housing, sanitation, waste disposal, and water supplies are poor.

The general health of the children is fair. Worm infestation, discharging ears, ringworm and dental caries appear to be the main problems with occasional outbreaks of gastroenteritis and head lice. Many women are on "the pill", there is great need for family planning.

Health Education so far has been mainly by word of mouth, charts, demonstration in practical situations, literature and posters, mainly with the individual. It is considered there is great potential especially among the young mothers, teenagers and young children.

Sister Biddulph stresses the need for a permanent welfare officer for this area, as the present services cannot adequately cope.

WOLLONGONG TEACHERS COLLEGE

TABLE XI—SUMMARY OF WORK DONE BY COLLEGE MEDICAL OFFICERS

	1970	1971
Total enrolment of students	762	895
Number of separate health education courses	3	4
Total number of lectures given per week	13	7 (1st and 2nd term). 11 (3rd term)
Number of examination papers set	2	4
Total examination papers and assignments corrected	352	588
Number of health demonstration lessons arranged	30	16
Number of students observed at practice teaching	6	Nil
Number of student visits arranged in health courses	3	Nil
Number of guest speakers invited	1	3
Student consultations for medical and surgical first aid	401	387
Student consultations (counselling)	25	10
Total number of students immunized	100	50
Staff consultations for first-aid	50	53
Total number of students examined for superannuation benefits	294	286
Number examined by college medical officers	294	151

Comment

In February the second medical officer (part-time) was given study leave to attend the Diploma of Public Health course. He was not replaced until August. As a result the year's programme was very disrupted.

Three immunization clinics were held during the year for protection of students against tetanus and poliomyelitis.

Dr Ford continued her work as secretary of the Wollongong Committee for Investigation of Drug Problems in the Wollongong District. She regularly visited the Sydney Teachers College as member of a working group on guidelines for medical officers in teachers colleges. In October, Dr Ford accompanied a group of students to New Guinea as one of three supervisors of practice teaching in indigenous schools. An article describing medical conditions and services there has been prepared for publication. In August, a research paper by Dr Ford "Illegal Drug Use in a Student Population" was published in the *Australian Medical Journal* (No. 2.39 August 7th, 1971).

PRIVATE HOSPITALS AND REST HOMES

TABLE XII

Category	Number licensed 1970	Number licensed 1971	Number of beds 1970	Number of beds 1971
Private hospitals	5	6	94 (+ 2 cots)	127 (+ 12 cots)
Rest homes	11	12	382	433
Total	16	18	478	572

Comment

There has been an appreciable increase in the number of private hospitals and rest home beds in the area.

Extensions to five existing premises added fifty beds in the year.

A private hospital for the Illawarra Crippled Children's Society was licensed for sixteen beds and ten cots in November, 1971.

An existing building in Moss Vale was licensed for eighteen rest home beds in August, 1971.

Plans were approved for a 27-bed rest home addition to the existing St Francis Home for the Aged in Wollongong, and the approval of plans for a Rest Home in Tahmoor lapsed in June.

There were eight routine inspections of Private Hospitals and Rest Homes made throughout the year, this low figure being due to staff shortage.

FORENSIC MEDICINE

TABLE XIII—SUMMARY OF FORENSIC MEDICAL WORK

	1970	1971
Number of autopsies performed	254	269
Number of examinations for Police Department	46	53
Number of appearances in court	30	60

Comment

During the period from 1st January to 31st December, there were 196 post mortems at Wollongong, 61 at Port Kembla, 12 at Bulli. These post-mortems involved 29 during weekends. There were 53 carnal knowledge cases, a slight increase on the previous year.

During this period there were about six suicides. Also many cases involving court cases, assaults, two murders. Examination of prisoners was carried out, also medical examination of applicants for employment in the Public Service.

There has been a drop in the number of fatalities in motor accidents.

TABLE XIV—MEDICAL EXAMINATIONS

	1970	1971
Performed for Medical Examination Centre and Department of Motor Transport	194	255

HEALTH EDUCATION

Much active work throughout the year included work in co-operation with the Good Neighbour Council, the Migrant Education Television Show "You Say the Word", the Police Department, the Wollongong Drug Committee, Schools, local Councils, Community organizations and the various sections of the Health Department.

The revised edition of the *Health and Welfare Directory: Wollongong Area* was completed. The *Illawarra Mercury* published this directory as a free lift-out section in their newspaper on 5th October, 1971. Over 30,000 copies were distributed throughout the Wollongong area.

TABLE XV—WORK OF HEALTH EDUCATION OFFICER

Meetings attended	50
Lectures given	7
Films screened	10
Organization of conferences, workshops, exhibitions, etc.	16

MISCELLANEOUS

Wollongong Drug Committee

Formed in 1970 as an outcome of work done by this office, this committee represents a very successful welding of official and voluntary resources. It is well supported by the Community. Support in goods, services and personnel has been received from industries, the Trades and Labour Council, the press, hospitals and many individuals. During the year the drug workshop was organized to train "approved educators" for educational work on a much larger scale than has hitherto been possible. Requests for approved educators are channelled through this office. Guidelines for the educators were drawn up and many requests were received.

Major educational programmes planned for 1972 are—

(1) A workshop for industrial executives in February.

(2) A series of parents discussion evenings.

(3) A 5-day drug Teach-in for teachers and school counsellors.

(4) Continuation of drug education discussion evenings for local community groups.

Social Health

The appointment of a full-time social worker, a health education officer and a community health nurse (Aboriginal Welfare) has stepped up the ability of this office to increasingly assist the community in health and welfare activities. These officers as well as the Medical Officer of Health and his Deputy have been represented on various community organizations, such as—the Consultative Council on Aboriginal Affairs, Far South Coast Area (Bega); the Aboriginal Children's Advancement Society; the Family Planning Association; Marriage Guidance Committee; Civil Rehabilitation Committee; Psychiatric Rehabilitation Committee, Birthright and the Wollongong Drug Committee.

Public Relations

Co-operation with other government departments, organizations and agencies has been excellent. During the year a district branch of the Hospitals Commission was established with Headquarters at Wollongong. A close liaison has developed between the two offices: Health Department and Hospitals Commission.

Other Miscellaneous Matters

The Medical Officer of Health was absent for 5 months from March till August on long service leave. On his return local periodic conferences were commenced, one involving Health Department staff only, the other embracing health and welfare organizations generally in the Wollongong area.

Visitors to the Office

These included Dr K. Harris, Director of Tuberculosis, Dr Edna Stern, Sydney Teachers College; Miss Rochelle Levy; Mr W. Wilson, and Mr W. Davies, the last three being Health Education officers from the Division of Health Education, and numerous others.

WESTERN HEALTH DISTRICT

Location: George Street, Bathurst 2795

Medical Officer of Health: Dr H. P. Swan, M.B., B.Ch., B.A.O., D.P.H.

Deputy Medical Officer of Health: Dr M. A. Rozalla, O.B.E., M.B., D.P.H., D.T.M. & H.

STAFF (as at 31st December, 1971)

1 School Medical Officer.
2 School Nurses.
1 Senior Food Inspector.
1 Senior Health Inspector.
3 Health Inspectors.
1 District Nursing Supervisor (previously known as assistant nurse inspector).
12 Baby Health Centre Sisters.
5 Part-time Baby Health Centre Sisters.
3 Tuberculosis Sisters.
1 Community Health Nurse.
1 Community Health Nurse (Aboriginal).
1 Speech Therapist.
1 Shorthand/Typist.
2 Typists (one temporary).

Vacancies

1 School Medical Officer.
1 School Nurse.
1 Senior Clerk.
1 Part-time Speech Therapist.

THE DISTRICT

The Western Health District adjoins the Western Metropolitan, Newcastle and Northwestern Health Districts to the east, the South Coast and Riverina Health Districts to the south, and Broken Hill District and the Queensland border to the west and north respectively.

The district comprises twelve municipalities and twenty-seven shire areas, the Blue Mountains City having been transferred to the Western Metropolitan Health District on 22nd October, 1971. The areas in the district are as follows:

Municipalities: city of Bathurst, city of Dubbo, city of Lithgow, city of Orange, Condobolin, Cowra, Forbes, Mudgee, Narromine, Nyngan, Parkes, and Peak Hill.

Shires: Abercrombie, Blaxland, Bogan, Boree, Brewarrina, Canobolas, Cobar, Coolah, Coonabarabran, Coonamble, Cudgegong, Darling, Gilgandra, Goobang, Jemalong, Lachlan, Lyndhurst, Molong, Oberon, Rylstone, Talbragar, Timbrebongie, Turon, Walgett, Warren, Waugoola, Wellington.

VITAL STATISTICS

Population.—The population of the district at 30th June, 1970, was estimated at 272,210. The area of the district was 97,251·7 square miles. At 30th June, 1971, the population was 273,123 (preliminary census figure).

With the transfer of the city of the Blue Mountains to the Western Metropolitan Health District in October, the population of the Western Health District was reduced on the basis of the census to 236,496 and the area reduced to 96,709·3 square miles. The remaining figures are on the basis of the old boundaries.

Live-births.—There were 6,059 live-births equivalent to a rate of 22·18 per 1,000 of population.

Deaths.—There were 131 deaths under one year of age equivalent to a rate of 21·62 per 1,000 live-births.

Of the total number of deaths of infants under 1 year of age, 83 occurred within 1 week of birth and 90 within the first month. The corresponding rates per 1,000 live-births for the two age groups were 13·70 and 14·85 respectively.

Stillbirths.—There were 98 stillbirths, equal to a rate of 15·92 per 1,000 of all births (live and still).

COMMUNICABLE DISEASES

During 1971 and the previous year the following communicable diseases were notified in the Health District.

TABLE I—NOTIFIED COMMUNICABLE DISEASES AND DEATHS 1970–71

	1970		1971	
	Case	Death	Case	Death
Brucellosis	8	..	5	..
Anthrax	..	..	..	..
Infectious hepatitis	370	1	325	2
Infantile diarrhoea	17	6	18	6
Tuberculosis	31	..	20	1
Virus encephalitis	4	1	4	2
Gonorrhoea	17	..	10	..
Syphilis	2	..	14	..
Hydatid disease	4	1	2	1
Tetanus	1	..	..	..
Diphtheria	..	..	..	..
Malaria	4	..	3	..
"Q" fever	23	..	1	..
Leptospirosis	8	..	..	..
Total	489	9	402	12

There was a slight reduction in the incidence of various infectious diseases, except syphilis, compared with the previous year.

In the case of syphilis, there were ten notifications to the Western Health District Office, compared to two in 1970.

Infectious Hepatitis

The number of cases was still very high, 325 including 2 deaths. A large outbreak was reported from Goodooga, and the town was visited by staff, of the Western Health District office, and specimens taken for serum tests. A further batch of specimens was taken by the general practitioner at Goodooga a few days later. Of the total of 25 specimens taken, only 3 proved positive for the disease, and the general practitioner was notified accordingly.

Other outbreaks of the disease occurred at Nyngan, Condobolin, and Dubbo, and appropriate measures were taken by staff of the department.

Brucellosis and "Q" Fever

Notifications sent in indicated a decline in these two diseases. There were 5 cases of brucellosis, 1 case of "Q" fever notified in the district.

Hydatid Disease

This remains a big problem, and the number of cases notified does not bear relation to the risk of contracting the disease in the Western Health District. Two cases were notified from the district including one death.

Malaria

Three cases were reported, and all appear to be imported cases.

Venereal Disease

This is on the increase, and again the number of notifications received does not appear to indicate the true state of affairs.

A system of improving the notification of infectious diseases generally is under active consideration at present.

PURE FOOD ADMINISTRATION

There was a drop in the amount of food work performed during the year. This could be attributed to the apparent failure of the "pilot scheme" to function efficiently. A recommendation was forwarded from this office in March, 1971, that the "pilot scheme" be discontinued. No reply has been received to date. The senior food inspector had the impossible task of supervising the whole district with regard to food standards and technology.

Routine inspections of Government Institutions revealed a marked improvement with regard to structural defects and the fitting out of kitchens, etc.

Slaughtering premises were inspected, and following both verbal and written warnings a marked improvement was observed in both hygiene and structural standards.

Sporting fixtures, Orange Field Days and shows were visited where possible.

Some enquiries were carried out on behalf of the Dental Board.

Assistance and advice was given to Licensing Police in respect of licensed hotels, clubs, etc.

TABLE II—PURE FOOD INSPECTIONS, PROSECUTIONS AND FINES, 1970–71

	1970	1971
Milk Samples—		
Number of milk samples taken for analysis	25	16
Number of samples below standard	..	..
Number of warnings issued	..	..
Number of prosecutions	..	..
Amount of fines and costs	..	..
Food and Drugs (other than milk)—		
Number of samples taken for analysis	42	64
Number of samples below standard	18	10
Number of warnings	8	4
Number of prosecutions	10	6
Amount of fines and costs	$430	$352
Seizures—		
Quantity of food and drugs unfit for human consumption seized and destroyed	1,500 lb	Nil
Premises—		
Number of inspections of premises (food and drug)	988	434
Number of notices issued	277	112
Number of prosecutions for unclean premises	10	6
Amount of fines and costs	$758	$870
General Breaches of the Act and Regulations—		
Number of prosecutions	9	23
Amount of fines and costs	$671	$1,204
Action under other Acts—		
Prosecutions	1	1
Fines and costs	$52	$32
Other Matters—		
Complaints investigated	27	16
Enquiries, interviews and advisory services	620	350
Inspections of departmental Hospitals	1	1
Inspections of child welfare and prisons estates	5	4
Shows, race meetings, functions etc.	8	6
Prosecutions recommended	33	37
Any other work undertaken	..	..

ENVIRONMENTAL HYGIENE

Health conditions of Aboriginal stations have not yet reached a desirable level; considerable improvement was achieved at Condobolin Reserve where the existing Aboriginal dwellings have been provided with septic tanks.

Public institutions such as prisons, schools, hospitals, and Child Welfare homes were inspected at regular intervals.

During the year Coolah and Gulgong Sewerage Works came into operation. Work is in hand on the construction of the sewage treatment works at Rylstone and Kandos. Gulargambone and Molong have been scheduled for sewage treatment works.

Water treatment works at Bathurst are nearing completion, and filtrated, chlorinated and fluoridated water will be available to the public in June, 1972.

At the request of the Walgett and Darling Shires, assistance was provided during the floods in the area and two (2) inspectors were sent to Bourke and Collarenebri in the affected areas to assist the local councils. The inspector sent to Collarenebri was accompanied by a departmental nurse.

A survey of undertakers was completed during the year and a report forwarded to head office.

Pollution from the discharge of effluent (sewage and trade) is still receiving attention. Particularly unsatisfactory conditions were noted at Bathurst, Lithgow, and Orange. The authorities concerned have been reminded of their duties, but progress is slow.

Surveys commenced on caravan parks, camping grounds, and the supervision of maintenance of Council and Motel swimming pools continued.

Assistance has been given to officers of the Housing Commission regarding the function and design of oxidation ponds at Nanima Aboriginal Reserve.

Health education continued with lectures to nurses at Bathurst District Hospital on environmental sanitation, and field trips were arranged to the local sewage treatment works. Assistance has been given to trainee nurses by providing health education material in connection with pollution problems.

The annual Conference of Local Government Health Surveyors was held at Dubbo. Conference sessions were devoted to public water supplies, agricultural health, fluoridation and health education.

TABLE III—ENVIRONMENTAL HYGIENE INSPECTIONS 1970–71

	1970	1971
Inspections and reinspection of towns and villages	11	10
Government institutions and Aboriginal reserve inspections	20	41
Inspections of buildings, hotels, public halls and hospitals, theatres, dwellings, barber shops, schools	224	138
Abattoirs inspected	17	11
Inspections on public amenities, camping grounds, parks, reserves, swimming pools	186	275
Joint inspections—Public Works Department	5	14
Investigation of infectious diseases and nuisances	101	113
Trade waste disposal and water pollution investigations	37	31
Noxious trades premises inspected	173	101
Garbage and nightsoil inspections	200	265
Investigations of water supplies and inspections	45	117
Water samples collected for analysis	94	45
Sewerage treatment work sites, existing and proposed	40	53
Court attendances	3	12
Septic tanks—towns and villages Re: Mass installations	2	5
Septic tank sites—existing and proposed	852	1,193
Septic tank applications dealt with	891	1,268

TUBERCULOSIS CONTROL

TABLE IV—TUBERCULOSIS CONTROL WORK 1970–71

	1970	1971
1. Attendances—		
(a) Active Pulmonary Tuberculosis	257	303
(b) Active Non-Pulmonary Tuberculosis	13	6
(c) Inactive Tuberculosis (all forms)	1,011	1,208
(d) Contacts	2,355	1,221
(e) Others	1,133	2,265
Total	4,769	5,003
2. Home visits	612	822
3. Tuberculosis Tests	n/a	2,366
4. B.C.G. vaccinations	n/a	503
5. X-rays	1,911	1,979
6. Bacteriological investigations	452	557

RUBELLA IMMUNIZATION CAMPAIGN

This campaign which was conducted by staff of the Western Health District, commenced on 22nd March, 1971, and ended on 20th September. Girls over the age of 12 and under 15 years of age, in 2nd and 3rd forms in high schools were immunized, and the campaign covered 3,665 pupils. The immunization teams spent a total of 22 nights away from the Office during the campaign, each team consisting of a doctor and a nurse. In addition the teams spent a total of 371 hours during day trips, covering 70 schools. One school was covered by a general practitioner, who offered his services in a voluntary capacity.

MEDICAL EXAMINATIONS

A total of forty-two medical examinations were carried out during the year. Examinations were mainly in relation to permanent appointment, superannuation, fitness for duty, and pensioners requesting a rebate of motor vehicle tax.

MATERNAL AND INFANT CARE

TABLE V—ATTENDANCES AND VISITS

	1970	1971
Number of attendances at centres	64,142	72,146
Individual attendance at centres	9,355	10,190
Hospital visits	4,091	4,296
Home visiting hours	1,772	1,808

There are now forty-three Baby Health Centres in the Western Health District. Five Centres at Blackheath, Katoomba, Lawson, Glenbrook, and Springwood were transferred to the Western Metropolitan Health District in October, 1971—the figures for November and December from these Centres are included in this report.

During the year, the assistant nurse inspector carried out forty-six Baby Health Centre inspections and visited two proposed Centre sites at Glenbrook and Dubbo.

One Centre at Greenthorpe was reopened in October. Investigations were carried out regarding the establishment of a Community Health Nurse at Coonamble and it is expected that an appointment will be made in the near future. Following this appointment it is then expected that a Centre at West Dubbo can be opened, and investigation has been proceeding regarding this. The arrangements for establishing a Centre at Manildra are proceeding.

There were no nominations for the Departmental Inservice Training Course as local relief was not available.

CHILD HEALTH

During 1971, further efforts were made to improve the service provided by the school medical teams, particularly those in the Shires Scheme. Visits by a departmental school nurse to various councils, to help the school nurse employed by the Council, proved most useful in achieving this. Unfortunately, at the end of the year, the vacancy for another departmental school medical officer and one for a school nurse remained unfilled, and this hampered the extension of the service in the district.

TABLE VI—SUMMARY OF WORK PERFORMED BY SCHOOL MEDICAL OFFICERS AND NURSES 1970–71

	1970	1971
Primary School—		
Full examinations by Medical Officer	1,646	1,789
Review examinations by medical officer and nurse (all grades)	1,602	1,006
Review examinations conducted by nurse (4th grade only)	2,035	948
Secondary School—		
Full examinations (2nd form where applicable)	..	..
Review examinations—not referred to medical officer	2,989	2,719
Referred to medical officer	..	7
Number of parent interviews (total)	57	20

TABLE VII—SUMMARY OF WORK PERFORMED UNDER SHIRES SCHEME 1970–71

	1970	1971
Primary School—		
Full examinations by medical officer	3,432	4,226
Reviews by medical officer and nurse (all grades including 4th grade)	2,808	3,384
Reviews examinations conducted by nurse (4th grade only)	867	1,446
Secondary School—		
Full examinations (2nd Form where applicable)	21	283
Review examinations—not referred to medical officer	1,701	2,673
Referred to medical officer	167	1,153
No. of parent interviews (total)	n/a	169

SPECIAL SERVICES

Diagnostic teams from the metropolitan area visited Dubbo, Parkes, and Orange, and a total of 116 children were seen by the three teams. The departmental school medical staff and the speech therapist at Bathurst/Orange worked with the teams for part of the time.

The speech therapy clinics at Bathurst/Orange, Katoomba/Springwood, and Dubbo (until May, 1971) covered the following work during 1971.

TABLE VIII—SPEECH THERAPY CLINICS

	1970	1971
Total number of attendances	2,447	3,045
Number of initial interviews	240	229
Number of reviews	146	149
Number of school visits	38	28

MITCHELL COLLEGE OF ADVANCED EDUCATION

A medical officer is seconded to the college from the Department of Health, for full-time duty there. During the year, the medical officer delivered 54 lectures on matters concerned with health education, and set 3 different examinations papers for a total of 243 students. In addition 253 assignments were corrected.

The health supervision of students was maintained, and eighty-three student consultations were held. Student consultations for counselling numbered six, while student consultations for fitness for scholarships numbered fifteen.

In addition 149 students were immunized against tetanus.

During the year, the medical officer also carried out a total of 321 medical examinations, 291 on incoming students, and 30 on those leaving the college.

PRIVATE HOSPITALS

One new private hospital of forty-six beds was opened and enquiries concerning two other new private hospitals were made.

Approval was also sought for alterations to one existing private hospital.

Two private hospitals were transferred to the Western Metropolitan Health District in October, 1971.

There are now four private hospitals in the Western Health District.

TABLE IX—BED-STRENGTH OF PRIVATE HOSPITALS

Hospitals	1970	1971
No. of hospitals	5	4
Beds	66	99
Cots	52	8 and 2 bassinettes

A total of eight inspections of premises were carried out, and ten interviews were held with licensees and proposed licensees.

REST HOMES

One new rest home of sixty-four beds was opened and one rest home of thirty-two beds which was converted from a private hospital, was opened. Approval was also sought for alterations and additions to five rest homes.

Sixteen rest homes were transferred to the Western Metropolitan Health District and there are now nine rest homes with two more nearing completion in the Western Health District.

TABLE X—BED-STRENGTH OF PRIVATE HOSPITALS

Rest Homes	1970	1971
Number of rest homes	23	9
Beds	690	225
Cots	64	..

A total of forty inspections of premises were carried out and seventeen interviews were held with licensees and proposed licensees.

HEALTH EDUCATIONS AND CONFERENCES

Health education leaflets and pamphlets were sent to all Councils and Baby Health Centres during the year, and handed to visitors at the Western Health District Office. The material covered community aid services, departmental services, infectious diseases, environmental sanitation, and food hygiene.

The Western Health District health surveyors annual conference was held in the Civic Hall at Dubbo. Speakers covered health problems connected with water supplies and agriculture, and the impact of fluoridation. Methods used in health education and their effect were also discussed.

The annual conference of community health nurses was cancelled, following a request to effect savings wherever possible, because of the financial strain on Government resources.

MISCELLANEOUS

The Western Health District Office was visited on several occasions by the Director of Tuberculosis for N.S.W. The Secretary of the Board of Health also paid a visit. Other visitors included officers from the Division of Health Education, the Division of Occupational Health, and the Division of Training.

There were numerous visitors from other Government departments connected with Education, Public Works, and the Public Service Board.

During the year the rented premises housing the Western Health District office were painted, and minor alterations were carried out at the same time in the office area.

As in the past, a series of lectures was given to nurses in training at the Bathurst District Hospital on infectious diseases and Community Health.

NORTH COAST HEALTH DISTRICT

Location: 11 Molesworth Street, Lismore

Medical Officer of Health: J. R. Whitfield, M.B., B.S., D.F.M., F.A.C.M.A.

STAFF

1 Deputy Medical Officer of Health
3 Medical Officers
1 District Nursing Supervisor
4 Child Health Nurses
2 Tuberculosis Nurses
1 Senior Health Inspector
2 Health Inspectors
1 Senior Food Inspector
1 Food Inspector
8 Baby Health Centre Sisters
2 Speech Therapists
1 Clerk
1 Shorthandwriter/Typist
1 Office Assistant

DISTRICT

The North Coast Health District comprises the following local authority areas:

Municipalities: Ballina, Casino, city of Grafton, city of Lismore, Mullumbimby.

Shires: Bellingen, Byron, Coffs Harbour, Copmanhurst, Gundurimba, Kyogle, Maclean, Nambucca, Nymboida, Terania, Tintenbar, Tomki, Tweed, Ulmarra, Woodburn.

VITAL STATISTICS

Population.—The population of the district at 30th June, 1971 was 160,970 (preliminary census figure).

Live births.—There were 3,023 live-births in the district, equivalent to a rate of 18·78 per 1,000 of population.

Deaths.—Deaths numbered 1,499 equivalent to a rate of 9·31 per 1,000 of population.

Infantile Mortality.—Deaths under 1 year of age numbered 53 equivalent to a rate of 17·53 per 1,000 live-births.

Of the total number of deaths of infants under 1 year of age 39 occurred within 1 week of birth, and 43 within the first month. The corresponding rates per 1,000 live-births for the two age groups were 12·90 and 14·22 respectively.

Stillbirths.—There were 34 stillbirths in the district equal to a rate of 11·12 per 1,000 of all births (live and still).

ENVIRONMENTAL HYGIENE

Close liaison was maintained with officers of the Departments of Public Works, Child and Social Welfare, Lands, Housing Commission, and the Board of Fire Commissioners regarding various problems associated with Aboriginal reserves, effluent disposal, sewerage, private hospitals, land development, and foreshore reclamation. Much time was expended with architects, engineers, surveyors and land developing company representatives on problems associated on proposed large scale subdivisions at seaside resorts.

Aboriginal stations were visited in regard to worm infestation and recommendations made on methods necessary to overcome excessive damp conditions. Advice was given to the appropriate departments on improvements necessary to the dwellings to raise the hygienic living standards of the inhabitants.

Unsatisfactory water supplies still receive constant attention and several councils were requested to increase chlorination dosage rates. It was recommended to one council, supplying a large area, to have a stand-by chlorinator, whilst two other areas were advised to obtain alternate suitable water supplies. High coliform counts are still being encountered and the amount of iron in the water supplies in this area will remain a problem until all water supplies are filtered.

Air pollution problems were investigated in conjunction with the Division of Occupational Health. Problems encountered were associated with sawmill teepee burners, abattoir by-products sections, sugar mills and a peanut processing factory.

Unsatisfactory conditions found at schools were still mainly related to overcrowding and the lack of maintenance to water bubblers, toilet seats and doors and stormwater drainage.

Preliminary surveys were carried out on the three main rivers (Richmond, Tweed and Clarence) in this Health District, and the results of these pollution surveys were forwarded to the Water Pollution Control Branch for stream classification.

A comprehensive survey was carried out on the design and functioning of sewage treatment effluent ponds to ascertain their effectiveness. Sampling of suspected points of pollution was still carried out and recommendations were conveyed to local authorities, where necessary, of the required remedial action to overcome the problem.

During the past 12 months new sewerage works have been completed at Kingscliff, Brunswick Heads, Evans Head, Woodburn, Urunga and Nambucca, whilst work is under construction at Byron Bay, Maclean and Yamba.

Special surveys were undertaken on all undertakers' premises in the district as to buildings, equipment and practices with regard to Section 63A of the Public Health Act. A survey was completed of sanitation facilities at three major beach resorts on behalf of the World Federation of Public Health Associations.

Ministerial complaints regarding sanitary depots, water supply, car body dumps, sandflies and building construction were investigated.

OCCUPATIONAL HEALTH

A case of lead poisoning was investigated at a battery manufacturer's premises, the possible cause was ascertained and recommendations given as to the necessary action required to overcome the hazard. After an inspection a special compressor used for filling SCUBA cylinders was relocated away from a workshop area to ensure complete freedom of possible contamination. The disposal of copper arsenate from a timber impregnation firm received attention. The use of methyl bromide for fumigation of logs for export to New Zealand, in an open area, was investigated and strict action was taken against the operator regarding lack of safety precautions and failure to comply with the requirements of the Public Health Regulations.

HEALTH INSPECTION

TABLE I—INSPECTION WORK CARRIED OUT IN 1971 WITH COMPARATIVE FIGURES FOR 1970

	1970	1971
Septic tanks (proposed and existing)	1,020	946
Noxious Trades	162	112
Sanitary Depots	340	367
Business Premises	47	18
Water Supplies and Samples	257	302
Sewage Treatment Works (proposed and existing)	67	76
Camping Reserves	54	27
Scavenging districts	1	6
Complaints	112	128
Other inspections	358	310
Liaison with architects, engineers and joint inspections	110	104
Aboriginal reserves	5	5

PURE FOOD

Table II—Inspections and Work Carried Out in 1971

	1970	1971
Premises inspected	758	590
Warning Notices issued	39	15
Samples For Analysis	228	222
Prosecutions	25	21
Fines and costs	$921	$700
Food placed under seizure	4,680 lb	3,200 lb

During the year ending 31st December, 1971, a decrease is noted in the number of inspections of premises, together with the number of warning notices issued. This has been brought about by extra time spent with local government officers in order to motivate and ultimately organize these officers to carry out inspections of food premises and food purveyors, purchase samples for analysis and issue notices, and when circumstances warrant punative action officers of this department advise and assist local government inspectors with prosecutions.

Whilst prosecutions have remained somewhat low in number, nevertheless considerable time has been spent with defended matters and also one matter heard before the Court of Appeals, this matter dealing with the manufacture and sale of sausages was considered as a "test case" and received wide publicity throughout the meat and smallgoods industry.

The senior food inspector has continued to give addresses to trade groups, food manufacturing industries and service organizations, etc., throughout the year and whenever possible has incorporated local government inspectors in order that these officers might participate and eventually become incurred in this no doubt necessary part of the work. Again, in this instance, it is felt organization and development of this facet of the work requires the concerted efforts of a health education officer.

COMMUNICABLE DISEASES

Table III—Notified Communicable Diseases and Deaths, 1970–1971

	1970		1971	
	Cases	Deaths	Cases	Deaths
Brucellosis	3	..	4	..
Diphtheria	..	..	1	..
Encephalitis viral	1	1	2	1
Infantile diorrhoea	28	3*	28	3
Infectious hepatitis	93	..	47	1
Lepto spirosis	4	..	13	..
Malaria	1	..	1	..
Ornithosis	1	..	..	..
"Q" fever	3	..	5	..
Tetanus	3	3	2	..
Tuberculosis	38	..	10	1
Typhus fever	2	..	1	..
Syphilis	..	..	2	..
Gonorrhoea	25	..	9	..

*One death occurred in 1970 but was not recorded in the annual report, 1970.

The case of diphtheria occurred in a child visitor to an Aboriginal reserve where a large number of children lived. Although a few carriers were found, there were no further cases. This was indicative of the high level of immunity in the community due, no doubt, to the known high acceptance rate of immunization. The case recovered and the carriers were successfully treated.

The falling incidence of venereal diseases observed in recent years continued when fewer than half the number of cases notified last year were recorded this year.

Also, in the past few years there has been a slight downward trend in the number of cases of infectious hepatitis notified.

An extremely high incidence of head lice in children at certain schools throughout the district caused much concern.

Officers of the Education and Child Welfare Departments and the local authorities co-operated with us to mitigate the outbreak.

IMMUNIZATION

Arrangements for the giving and distribution of Sabin polio virus vaccine continued unaltered during the year.

Vaccination against smallpox of ambulance officers and immunization against tetanus of staff of the Department of Agriculture were continued.

The first rubella immunization campaign was conducted this year when girls in second and third forms, aged 12 to 14 years were offered vaccination. Out of a total of 3,253 girls eligible for vaccination, 2,761 or 84 per cent were vaccinated. The department also provided a distribution centre for the vaccine to hospitals and general practitioners as it was also recommended that all post partum women should be offered free immunization against rubella before leaving hospital.

MATERNAL AND CHILD HEALTH

A slightly improved staffing position enabled more schools to be visited and more children to be examined than was the case last year. However, review examinations at high schools were considerably fewer because the four newly appointed school nurses did not take up their duties until after first term.

A hiatus between the departure of one medical officer and the arrival of another was a further factor militating against the fulfillment of a complete programme.

A cause of some satisfaction was the big increase in the number of children interviewed at school and visited at home by the school nurses.

A significant fall in the amount of work done in speech therapy was consequent upon the resignation of a speech therapist, leaving only one in the district during the latter half of the year.

The diagnostic teams from Ryde and Chatswood Child Health Centres saw a total of fifty-three children and a further four children were discussed with the school counsellors.

While attendances at baby health centres continued to rise, the number of visits made by baby health centre sisters fell slightly, the latter possibly being consequent upon the former.

TABLE IV—SCHOOL MEDICAL EXAMINATIONS

	1970	1971
Schools examined	136	178
Full examinations	3,167	3,994
Review examinations	11,375	12,029
Defects notified	1,227	1,009

TABLE V—BABY HEALTH CENTRE STATISTICS, 1971

	1970	1971
Number of baby health centres	29	29
Total attendances	36,539*	38,704
Under 1 year	31,426	33,514
Over 1 year and under 2 years	3,200	3,461
Over 2 years	1,314	1,729
Total babies attending for first time	2,545*	2,547
Under 1 year	2,380	2,483
Over 1 year and under 2 years	..	50
Over 2 years	..	14
Home visiting:		
Time spent (hours) total	1,482	1,176
Number of first visits	499	419
Number of subsequent visits	1,446	1,072
Number not seen	..	450
Total number of visits	..	1,941
Number of mothers seen in hospital	3,406	3,181
Number of individual attendances at centres	4,976	6,018
Number of inspections of baby health centres by district nursing supervisor	..	47

* Includes miscellaneous attendances.

TABLE VI—SPEECH THERAPY STATISTICS, 1971

Number of case histories	153
Number of reviews	65
Number attending current December, 1971	23
Number attending follow-up December, 1971	51
Number of individual attendances	1,300
Number of school visits	23
Number of cases referred	196

PRIVATE HOSPITALS AND REST HOMES

There are now 9 rest homes licensed in the district, two more than last year. These provide a total of 398-bed places. The homes are strategically situated throughout the district and, in the main, standards of care and accommodation are high. One licensed home comprises 2 separate buildings.

The two homes licensed this year are new purpose built dwellings of a high standard. An extension to an existing home was approved by the Board of Health and is under construction.

Every home was inspected at least once during the year by an officer of the Board of Fire Commissioners of New South Wales, in respect of work to be done to ensure safety measures in case of fire. Most required work to be done and by the end of the year all had complied apart from four homes which were considered unsatisfactory.

HEALTH EDUCATION

Although health education is part and parcel of the daily activities of all professional officers and this is perhaps the most effective medium, there remains an area of formal and didactic approach, which can be only filled by the employment of a health education officer.

During the past year talks and demonstrations have been given by various officers to interested groups and weekly radio broadcasts continue to be given on child health by one of the medical officers.

A senior health education officer from the Division of Health Education visited Lismore at the end of the year. He assessed the need for health education in the area and addressed a meeting of school medical staff on the possibilities of health education in a country district.

LISMORE TEACHERS' TRAINING COLLEGE

One day per week has been devoted to the Lismore Teachers' Training College for medical examinations, health counselling and first-aid by the newly appointed medical officer, who commenced duty in June.

TABLE VII—LISMORE TEACHERS' TRAINING COLLEGE STATISTICS

Medical examinations				Health counselling		First aid	
Male		Female		Male	Female	Male	Female
Full	Part	Full	Part				
46	25	73	49	8	9	4	5
Totals 193				17		9	

MENTALLY AND PHYSICALLY HANDICAPPED

School medical officers visited special schools for the mentally handicapped to examine and assess new enrolments during the year. The speech therapists have visited these schools each term to assist teachers in speech management problems; and the speech therapist at Lismore has spent one day per week at the Rehabilitation Unit at St Vincents Hospital.

The Regional Committee for the Mentally Handicapped has met regularly during the year and visited some of the schools in the area. A regional conference of delegates from the various associations was held at Grafton.

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There has been an interest in, and some development of, sheltered workshops or activities centres in the district. An avocado pear and macadamia nut farm is being established as a rural workshop for the physically handicapped.

GERIATRICS

The promotion of community services for the aged was continued throughout the year, and several local authorities have established home aide, meals-on-wheels and district nurse programmes. A recreation for the aged committee was formed in Lismore and ran a short training course for volunteers visiting the various homes for the aged.

With the establishment of new nursing homes, there are now sufficient beds to meet the needs of the district; and the standard of care given is generally good. Homes for the aged and hostel type accommodation continue to be developed by various agencies.

MENTAL HEALTH

When a psychiatrist left Lismore at the end of 1970, this district was left without any psychiatric services and patients were referred to Newcastle.

A fortnightly consultative service to the psychiatric unit at Lismore Base Hospital was provided by staff from Parramatta Psychiatric Centre. However the appointment of a full-time or part-time psychiatrist to staff the psychiatric unit is essential before any comprehensive mental health services can be developed.

ABORIGINAL HEALTH

Four Aboriginal girls commenced training as nurses aides at two base hospitals. This training scheme has received excellent support from the hospitals concerned and officers of the various agencies concerned with Aboriginal welfare have been enthusiastic in their efforts to find suitable girls for training.

There has been little change in the attitude of Aborigines to the use of existing health services; and there is an urgent need for the appointment of community health nurses and health education officers so that appropriate programmes of health care may be instituted.

All the twelve reserves in the area continue to be visited regularly by baby health centre sisters and child health staff. Several visits have been made to deal with environmental problems.

STAFF TRAINING AND CONFERENCES

A conference of local government health inspectors was held at Yamba and subjects discussed included caravan parks, industrial hygiene, health education, State planning and home aid services.

Child health staff attended a conference in Lismore, and the medical officers, district nursing supervisor and speech therapist attended the annual conference of the Bureau of Maternal and Child Health in Sydney. Four recently appointed child health nurses received one week of inservice training.

The district nursing supervisor attended a conference for supervisors and community health nurses; and the senior food inspector spent three days of practical inspectorial inservice training in the Newcastle Health District.

MEDICAL EXAMINATIONS

Medical examinations for permanent and temporary employment, to determine fitness to contribute to the State Superannuation Fund, and to assess fitness to continue in employment were carried out during the year.

Also ex-servicemen were examined in connection with travelling concessions and rebate of motor tax.

The number of examinations carried out was 120.

NORTH WESTERN HEALTH DISTRICT

Location: V. Guy Kable Memorial Arts Building, 203 Marius Street, Tamworth 2340

Medical Officer of Health: Dr P. A. M. van de Linde, M.B., B.S., D.P.H., D.I.H.

STAFF

1 Deputy Medical Officer of Health
2 School Medical Officers
1 Medical Officer (teachers college)
1 Senior Food Inspector
1 Senior Health Inspector
2 Health Inspectors
1 Assistant Nurse Inspector
11 Baby Health Centre Sisters
1 Community Health Nurse
1 Community Health Worker
3 School Nurses
2 Tuberculosis Clinic Sisters
1 Speech Therapist
1 Part-time Speech Therapist
1 Clerk
1 Shorthand/Typist
1 Typist

THE HEALTH DISTRICT

This district lies between the North Coast and Western Health Districts and the Queensland border and includes the cities of Armidale and Tamworth, the municipalities of Glen Innes, Gunnedah, Inverell, Moree, Narrabri, Quirindi, and Tenterfield, and the shires of Ashford, Barraba, Bingara, Boolooroo, Boomi, Cockburn, Dumaresq, Guyra, Liverpool Plains, Macintyre, Manilla, Murrurundi, Namoi, Nundle, Peel, Severn, Tamarang, Tenterfield, Uralla, Walcha, and Yallaroi. There have been no boundary changes during the year under review.

VITAL STATISTICS

Population.—The population of the district on 30th June, 1971, was 166,184 (preliminary census figure). This is an increase of 1,334 over last year.

Live-births.—There were 3,736 live-births in this district, equivalent to a rate of 22·48 per 1,000 population.

Deaths.—Deaths numbered 1,351 equivalent to a rate of 8·13 per 1,000 population.

Infantile Mortality.—Deaths under 1 year of age numbered 80 equivalent to a rate of 21·41 per 1,000 live-births. Of the total number of deaths in infants under 1 year of age, 54 occurred within 1 week of birth and 56 within 1 month. The corresponding rates per 1,000 live-births for the two age groups were 14·45 and 14·99 respectively.

Stillbirths.—There were 50 stillbirths in the district, equivalent to a rate of 13·21 per 1,000 births (live and still).

GENERAL REMARKS

With the co-operation of Local Government steady progress has been made in all fields of environmental and food hygiene, with the possible exception of housing itinerant workers.

It is in medicosocial work that there is the greatest need for development today. This is increasingly recognized by Local Councils who turn to this department for advice on the provision of services as well as for help with case work.

This office can provide a valuable clearing house for information on medical matters beyond the limits of notifiable disease and to this end liaison with medical practitioners is being maintained and strengthened.

LOCAL AUTHORITIES AND ENVIRONMENTAL HEALTH

Eighteen Local Authorities now employ full-time Health Surveyors and some more than one; in 11 areas the appointment is shared with another Authority. Nundle is still without the services of trained staff (except from this office) and because of its small size it is hard to foresee any change in the near future.

TABLE I—ENVIRONMENTAL HYGIENE INSPECTIONS

	1970	1971
Aboriginal villages	16	24
Public amenities	77	50
Dwellings and shops	168	68
Public institutions	26	27
Licensed premises	37	27
Meat supplies	44	24
Noxious trades	99	107
Complaints investigated	40	44
River pollution	16	2
Refuse disposal	330	228
Sanitary survey (towns and villages)	4	12
Septic tanks	395	335
Sewage treatment works	46	23
Water supplies	110	67
Other inspections	61	65
Samples for investigation	220	158

Inspections of Aboriginal Reserves and Stations have been continued. The results of recent capital expenditure on sanitary projects have been somewhat disappointing. Under the new administration of Aboriginal Reserves, Managers adopt a less authoritarian approach but the residents have not yet developed the community spirit or leadership necessary to maintain standards of hygiene on a voluntary basis. Overcrowding and cultural habits militate against improved conditions.

Government institutions are inspected regularly and defects generally dealt with promptly. Substandard buildings, particularly in remote spots, still pose a problem which is being tackled steadily by the Local Authorities concerned. Accommodation for itinerant workers in areas where seasonal work predominates continues to cause concern. A move is in hand in the Wee Waa area to provide sanitary facilities at selected locations; no living accommodation will be provided but essentials such as water supplies and toilets should enable improvements to be made. Funds for the project are being provided by the Department of Child Welfare and Social Welfare and it is hoped to achieve something before the next cotton-chipping season.

Meat supplies are mainly obtained from properly supervised regional abattoirs but elsewhere small private slaughterhouses are posing a threat to food hygiene. Since the change in the authority controlling these establishments uncertainty regarding their future places owners and Local Authorities in a difficult position.

Noxious trade premises continue to show improvement. For example, older methods of pig-raising are steadily giving rise to intensive pig-keeping which is easier to control. The disposal of industrial waste creates a hazard where industry spreads to country areas rather than to defined industrial zones. The increase in mining activity has caused disturbance to subsoil and a danger of pollution of streams, sometimes by toxic chemicals. Close liaison is maintained in this matter with the Department of Mines and with the Water Conservation and Irrigation Commission.

Sanitary arrangements at showgrounds have shown an improvement in most areas, particularly where septic tanks or sewerage systems have been installed. At others improvements are planned but a few unfortunate exceptions remain.

Water supplies have received close attention during the year. Extensive flooding in the Namoi Valley caused contamination of many wells and bores and Local Authorities worked hard to get these into service again. The majority were rectified but in at least one case the contamination has never been satisfactorily controlled since the flooding. The complexity of many reticulation systems and the absence of detailed plans render investigation and improvement difficult. The practice of pumping from wells direct into reticulation systems, using reservoirs simply as balance

tanks, complicates the introduction of chlorination and other purification measures. A survey of water supplies conducted during the year showed that only a small proportion could reach the standard for drinking water supplies. However, many Councils have now realized the importance of providing a water supply of constant quality and, although finance for improvements poses a problem, are giving serious consideration to this matter.

Disposal of garbage and nightsoil continues to improve in most areas but supervision remains a problem in remote villages. Sewage treatment works are now the rule in most towns and large villages but as development takes place some are becoming overloaded.

WEE WAA FLOODS

Extensive flooding in the Namoi Valley in February rendered nearly 300 itinerant workers homeless. They were evacuated by Army air transport to Tamworth where a temporary camp was set up in the showground. There they were cared for at first by the Army and Civil Defence Organization. Later this became a joint operation of the City Council, the Department of Child Welfare and Social Welfare and the Department of Health with assistance from a willing band of volunteers until, after 3 weeks, it was possible to transfer all the occupants elsewhere.

PURE FOOD ADMINISTRATION

TABLE II—FOOD INSPECTIONS

	1970	1971
Premises—		
Inspection of premises (food and drugs)	804	479
Notices issued	17	11
Prosecutions for unclean premises	1	3
Fines and costs	$502	$290 and $4
Food and drugs (other than milk)—		
Samples taken for analysis	386	436
Samples below standard	66	96
Warnings	41	67
Prosecutions	28	22
Fines and costs	$733	$885 and $42
Milk samples —		
Samples taken for analysis	232	139
Samples below standard	26	15
Warnings issued	10	3
Prosecutions	5	25
Fines and costs	$76	$497 and $50
General breaches of the Act and Regulations—		
Prosecutions	4	5
Fines and costs	$213	$160 and $10
Other matters—		
Complaints investigated	19	12
Food and drugs unfit for human consumption seized and destroyed	718 lbs	284 lbs
Spirits tested	470	394
Meats tested	211	182
Interviews with traders and members of the public	138	134
Visits to local authorities	93	97

During 1971, sampling surveys of certain foods were begun in addition to routine work. In a survey of 50 meat pies, the results indicated that over 80 per cent contained less than the prescribed quantity (25 per cent) of meat while 10 per cent of samples contained less than 10 per cent of meat. New techniques made it possible for the Government Analyst to detect meat of origin other than that used in the description of pork and beef sausages and manufactured meats and a number of samples were taken.

A growing demand for fresh goats' milk in the Tamworth area has led to an increase in production. Sampling results indicate that in some cases the product is below the standards required of cows' milk and the bacterial counts could represent a danger to the health of the consumer. Results of cows' milk samples continue to give rise to concern, the worst results being again from one particular area. However, one of the offending dairies has since gone out of production.

The results of sampling of 50 specimens of fortified wines indicated that 34 per cent were deficient in alcoholic strength. Deficiencies in the results of samples of other foods continued at approximately the same level as in other years.

The Senior Food Inspector attended a 4-week Inservice Training Course at Head Office in January.

PERSONAL HEALTH SERVICES

TABLE III—COMMUNICABLE DISEASES

	1970		1971	
	cases	deaths	cases	deaths
Brucellosis	2	..	3	..
Encephalitis—viral	5	1	..	..
Hydatid disease	3	..	1	..
Infectious hepatitis	146	..	119	..
Infantile diarrhoea	24	6	43	7
Leptospirosis	3	..	1	..
Malaria	3	..	4	..
"Q" fever	5	..	1	..
Tuberculosis	25	..	11	..
Venereal diseases—				
Gonorrhoea	39	..	29	..
Syphilis	2	..	..	..
Tetanus	..	..	1	..

The most frequently notified disease was infectious hepatitis. Cases were evenly distributed throughout the district with the exception of Tamworth where sixty-one cases were recorded in a small outbreak during July to September. In spite of this outbreak the number of notified cases was less than in 1970, which had the highest total for 4 years.

The rise in notifications of infantile diarrhoea may be attributed to the survey conducted in Moree from which the majority of cases were notified. The notification rate shows a discrepancy between the numbers of cases discovered by the survey and the numbers notified. It is particularly among Aborigines and others of low economic status that the incidence of infantile diarrhoea is high.

The fall in notifications of gonorrhoea does not appear to reflect the true incidence of this disease. Most of the cases were notified from one particular area.

IMMUNIZATION

Sabin immunization is offered to newborn babies by Local Councils and support is given by general practitioners and Baby Health Centres. At the Armidale, Narrabri, and Inverell Centres regular clinics were held and 1,287 doses were given. Some other Centres co-operated with Councils in organizing clinics.

Triple antigen was administered by local Councils, some of which held regular clinics. The general coverage of immunization against diphtheria, tetanus, and pertussis is not satisfactory and it appears difficult for the smaller Councils to provide an adequate service.

Departmental Officers gave 112 tetanus immunizations to the staff of the Department of Agriculture in six centres.

Two thousand nine hundred and fifty-two girls aged 12–14 years of age were immunized against rubella in thirty-one schools in a campaign performed by Staff of this office.

B.C.G. vaccine was issued to hospitals for inoculation of hospital staff at risk and of Aboriginal babies.

TUBERCULOSIS

The central clinic is at Tamworth Base Hospital where weekly sessions were conducted by the Chest Physician in Charge and two-monthly visits paid by the Consulting Physician. Patients requiring admission are treated in the adjoining Chest Block of the Base Hospital. There are eight subsidiary clinics conducted by local practitioners. Two chest clinic sisters were employed in 1971.

TABLE IV

	1970	1971
Attendances at Clinics		
Proven pulmonary tuberculosis	190	178
Extra pulmonary tuberculosis	21	18
Inactive	727	759
Newly notified cases	26*	11
Contacts	836	1,035
Other attendances	1,018	1,458
Total	2,792	3,459
Mantoux tests	1,042	1,413
B.C.G. vaccinations	118	155
Admissions	48	41
Daily average	7·3	5·5

* 26 newly notified cases included in a 190 Pulmonary Tuberculosis.

There were eleven notifications in 1971 which represents a considerable reduction in comparison with 1970. No mass X-ray surveys were conducted during the year.

MATERNAL AND CHILD HEALTH

Maternal and Infant Care

TABLE V

	1970	1971
Number of centres	28	29
Number of home visiting services	9	8
Total attendances	42,988	45,150
Number of individual attendances	6,127	5,950
Babies attending for first time	2,849	2,919
Hours spent home visiting	2,467	2,131

A temporary centre was opened at Emmaville and commenced service on 26th October, 1971.

Home visiting time was slightly reduced due to several factors; individual attendances also decreased slightly but the number of babies seen for the first time showed a slight increase.

Preparation for motherhood classes were continued in Tamworth where seven classes were held. At Narrabri two classes were conducted and one at Armidale where local doctors gave the lectures. Assistance was given to locally organized motherhood classes at Tenterfield and Walcha.

Thirteen Well Baby Clinic sessions were conducted in Tamworth by the School Medical Officer, with eighty-one attendances. The majority of cases were referred from Baby Health Centres, one by the Child Welfare Department and two were self-referred. General practitioners were informed of all children's attendances at the clinic.

A Community Health Worker joined the Community Health Nurse in Moree. Both have carried out hospital and home visits and participated in the infantile diarrhoea survey and in the health programmes of the local Pius X Mission. A community health service was introduced in Wee Waa with special emphasis on the health problems of itinerant families.

SCHOOL HEALTH

TABLE VI—EXAMINATIONS (FIGURES FOR 1970 IN PARENTHESES)

Type	Number of schools	Examinations	Reviews	Parent interviews
Full-time service	122 (83)	2,605 (2,861)	13,463 (9,358)	274 (236)
Country councils scheme	8 (43)	413 (2,394)	373 (2,183)	8 (26)
Total	130 (126)	3,018 (5,255)	13,836 (11,541)	282 (262)

With the appointment of a full-time School Medical Officer and Nurse to Inverell it has been possible to reduce the shire scheme to three Local Government areas.

One of the School Medical Nurses attended the Inservice Training Course and all three assisted with the Rubella vaccination campaign.

The diagnostic team from Forest Lodge Child Health Centre visited Inverell in July and assessed forty children with behaviour and other problems.

Additional facilities for treatment of problem children became available during the year at the Queenscliff Diagnostic Centre for Country Children.

Liaison with the Department of Education and the Child Welfare and Social Welfare Department is proving successful in the ascertainment, assessment and referral of problem children.

There was a decrease in the number of cases seen by the Commonwealth Acoustic Laboratories at Tamworth owing to a reduction in the frequency of visits by the staff from Newcastle.

SPEECH THERAPY (See end of report)

PRIVATE HOSPITALS AND REST HOMES

TABLE VII

	1970		1971	
	Number	Beds	Number	Beds
Private hospitals	4	81	3	62
Rest homes	5	158	8	250

One private hospital was reclassified as a rest home and two new rest homes were opened. Good liaison was maintained with local officers of the Board of Fire Commissioners.

MEDICOSOCIAL WORK

In the absence of a Social Worker, medicosocial work is carried out by staff members including the Assistant Nurse Inspector, School Medical Officer and Nurses, and Community Health staff. This makes it necessary to limit the number of cases that can be handled.

Many behavioural problems in children and associated families were dealt with and the assistant nurse inspector has followed up a number of families with medicosocial problems. The Community Health Nurse and Health Worker have been engaged principally in medicosocial work among the Aboriginal community at Moree. A systematic survey of the medicosocial needs of itinerant workers in Wee Waa was commenced in December and particular attention was paid to their migration pattern.

The co-operation given by the social worker at the local hospital and by other agencies has enabled an increasing number of cases to be referred to them.

HEALTH EDUCATION AND PUBLIC RELATIONS

Cordial relations have been maintained with Local Government Authorities and voluntary bodies and with the news media whose co-operation is acknowledged.

In the past, health education has been limited by the time staff can give to it and has included:

(1) general distribution of health education material;

(2) specific talks and discussions with interested groups of the public;

(3) organization of conferences and meetings in relation to health activities.

With greater support by personnel of the Health Education Division it has been possible to initiate a number of more systematic projects. Plans have been made for the introduction of hydatid disease control in two Shires. Drug education campaigns have been started in several localities and the Community Health Staff in Moree have been engaged in health education in relation to the control of diarrhoeal disease in children.

MEDICAL EXAMINATIONS

A total of seventy-five examinations were performed of which forty-five were males and thirty females.

SPEECH THERAPY

The demand for speech therapy continues to grow, partly because of better ascertainment. The appointment in January of a second speech therapist for 3 days a week enabled this demand to be met to some degree.

A weekly clinic was held at Armidale, 7 weeks were spent in assessments in smaller towns and a large number of schools were visited.

The number of children seen rose from 1,454 in 1970 to 2,637 in 1971. Weekly sessions at Tamworth Base Hospital were continued.

RIVERINA HEALTH DISTRICT

Location: New South Wales Government Offices, Cooper Street, Cootamundra

Medical Officer of Health: Dr David J. Law, M.B., B.S., D.P.H.

Deputy Medical Officer of Health: Dr T. R. McCall, M.B., Ch.B., D.P.H.

STAFF

1 School Medical Officer
1 Medical Officer (Wagga Wagga Teachers College)
1 Senior Food Inspector
1 Senior Health Inspector
2 Health Inspectors
1 Assistant Nurse Inspector
18 Baby Health Centre Sisters (1 part-time)
3 Tuberculosis Nurses
1 School Nurse
2 Community Health Nurses (Far western group of shires)
1 Community Health Nurse (Aboriginal Health Services)
1 Speech Therapist (part-time)
1 Senior Clerk
1 Shorthand Writer/Typist
1 Typist

One health inspector position was vacant for 11 months and the other throughout the year. On the resignation of the senior health inspector, the district was without health inspectors for 3 months. The vacancy for assistant nurse inspector was filled in March, an appointment was made to one of the community health nurse positions, and a part-time speech therapist was appointed to replace the speech therapist who resigned. Following the death of the school medical officer early in the year that position remained vacant as did that for medical officer, Wagga Wagga Teachers College.

DISTRICT

Comprising forty-five shires and municipalities and being almost 50,000 square miles in area the Riverina Health District is the second largest Health District. It is bounded in the south by the Victorian border and in the west by the South Australian border. The northern boundary extends from the South Australian border eastwards along the northern boundaries of the shires of Wentworth, Balranald, Carrathool, Bland, Weddin, Burrangong, and Boorowa to a point approximately 20 miles southwest of Cowra. Thence, the eastern boundary extends southwards along the eastern boundaries of the shires of Boorowa, Goodradigbee, Tumut, and Tumbarumba to the Victorian border.

VITAL STATISTICS

Population.—The population of the district on 30th June, 1971, was 254,227 (preliminary census figures).

Live-births.—There were 5,570 live-births in this district, equivalent to a rate of 21·91 per 1,000 population.

Deaths.—Deaths numbered 2,149, equivalent to a rate of 8·45 per 1,000 population.

Infantile Mortality.—Deaths under 1 year of age numbered 85, equivalent to a rate of 15·26 per 1,000 live-births. Of these 63 occurred within 1 week of birth, and 64 within 1 month. The corresponding rates per 1,000 live-births for the two age groups were 11·31 and 11·49 respectively.

Stillbirths.—There were 68 stillbirths in the district, equivalent to a rate of 12·06 per 1,000 of all births (live and still).

NOTIFIABLE COMMUNICABLE DISEASES

TABLE I—NOTIFICATIONS OF CASES AND DEATHS, 1970–71

Disease	1970		1971	
	Cases	Deaths	Cases	Deaths
Brucellosis	2	..	3	..
Encephalitis, viral	1	..	..	..
Gonorrhoea	26	..	37	..
Hydatid disease	2	1	5	3
Infantile diarrhoea	28	..	37	1
Infective hepatitis	225	1	332	1
Leptospirosis	1	..	1	..
Malaria	2	..	2	..
Syphilis	1	..	3	..
Tuberculosis	19	4	13 — 2	Re-activated cases
Typhoid fever	..	..	1	..

There was a substantial increase in the number of cases of infective hepatitis notified during the year compared with the previous year. This could be partly attributed to an improvement in notification in some areas, but the major contribution came from minor epidemics occurring in 5 widely separated and distinct communities during the months August to November. Of the 169 cases notified in the district during this period 106 cases occurred in these areas.

Following a report of a case of malaria (not imported) from the Griffith area, the senior health inspector carried out field sampling for the collection of adult mosquitoes and larvae. Specimens were forwarded to the School of Public Health and Tropical Medicine for identification. Results are awaited.

The total attendances, by patients and contacts, at chest clinics in the district was 2,036. Between them the three clinic sisters performed 1,315 tuberculin tests and made 308 home visits. A programme of regular visits to district hospitals was established to carry out, on nursing staff, tuberculin tests and, as indicated, B.C.G. vaccination.

ENVIRONMENTAL HYGIENE

The most significant single environmental activity undertaken was the survey into pollution of that part of the Murray River between the upper reaches of Lake Hume and the western boundary of Lake Mulwala, some 180 river miles in extent. This investigation was especially noteworthy in that it was the first venture conjointly undertaken by officers of the Victorian Health Commission and of this Health District.

The report was presented to the Ministers for Health of the two States, who approved the implementation of all recommendations made in the report.

The survey created intense interest in several State Government Departments, local authorities on both sides of the river, the news media and the general public, and Ministerial approval was given for wide distribution of copies of the report.

Public interest in water pollution remained at a high level throughout the year. A local authority health surveyor made a series of assertions which were widely, and somewhat sensationally, reported in the press. This resulted in a planned survey into the quality of water in the Murrumbidgee River between the point of entry into the Australian Capital Territory and that of discharge from Burrinjuck Dam being brought forward.

This survey was planned and executed in collaboration with officers of the A.C.T. Health Services with the knowledge and approval of the Commonwealth Departments of Interior and Works and the National Capital Development Commission.

During the course of the survey and before the accumulated data had been tabulated the Senate Standing Committee on Social Environment determined to examine the matter. The Medical Officer of Health prepared a written submission which was presented to the Standing Committee by the Minister. The liaison established with the Commonwealth officers is being maintained and continuing surveillance of the situation is intended.

TABLE II—ROUTINE INSPECTIONS AND INVESTIGATIONS, 1970–71

	1970	1971
Abbatoirs and slaughteryards	56	12
Aboriginal stations and reserves	6	2
Camping grounds and caravan parks	43	3
Dwellings and shops	355	15
Hotels	129	7
Nuisances and complaints	62	41
Noxious trades	163	121
Samples submitted for analysis	374	146
Sanitary surveys	7	1
Sanitary depots, existing and proposed	223	32
Septic tanks—applications dealt with	1,076	858
—mass installations	1	..
Sewage treatment works, including proposed sites	86	27
Others, including swimming pools, water supplies	101	13
Special investigations	5	2

Investigations into the widespread and indiscriminate use of highly toxic rodenticides during a prolonged plague of mice, and into the presence of *C. botulinum* in soils were carried out.

PURE FOOD ADMINISTRATION

The decrease, from 1970 to 1971, in the statistics relating to pure food is partly due to the absence of the Senior Food Inspector on sick leave and inservice training. It is also a reflection of the increased court work resulting from the continuing tendency for cases to be defended, itself the result of the recent substantial increases in penalties for offences under the Act and regulations.

TABLE III—INSPECTIONS, SAMPLES, NOTICES AND PROSECUTIONS, 1970–71

	1970	1971
Premises inspected	844	448
Notices served	69	51
Samples—purchased	302	239
—below standard	36	32
Spirits tested	239	411
Meats tested for preservative	178	240
Complaints investigated	43	34
Prosecutions completed	44	29
Fines and costs imposed	$2,780	$905

MATERNAL AND CHILD HEALTH

Maternal and Infant Care

The transfer of the Dareton Baby Health Centre to the new community health centre and the removal of the Wentworth centre from the hall previously in use to new premises significantly improved the working conditions of the Sister in charge of the Balranald circuit.

TABLE IV—ATTENDANCES AND HOME VISITS, 1970–71

	1970	1971
Number of baby health centres	64	64
Total attendances of babies and infants—		
Under 1 year	56,061	64,125
Over 1 year and under 2 years	6,581	6,666
Over 2 years	3,408	3,878
Total	67,103*	74,669
Babies and infants attending for 1st time—		
Under 1 year	3,439	4,811
Over 1 year and under 2 years	N.A.	73
Over 2 years	N.A.	24
Total	3,439	4,908
Home visiting—		
First visits	1,297	1,049
Subsequent visits	3,760	3,817
Total	5,057	4,866
Total time spent (hours)	2,544	2,600
Mothers seen in hospital	3,988	4,488

*Includes miscellaneous attendances.

Child Health

Because the position of school medical officer was vacant throughout the year no "full" examinations of children were carried out under the departmental scheme. The school nurse continued to visit schools to test vision and hearing and was also engaged in other appropriate activities including the rubella immunization campaign and health education in schools.

The programme of medical examinations under the Country Councils Scheme was satisfactorily maintained, utilizing the services of a doctor from outside the district.

TABLE V—MEDICAL EXAMINATIONS OF SCHOOL CHILDREN

Scheme	Schools visited	Children examined		Defects noted	Parents interviewed
		Fully	Reviewed		
Departmental—					
1970	86	1,513	4,893	506	286
1971	80	Nil	4,822	265	64
Country Councils—					
1970	110	6,790	5,723	1,610	473
1971	116	5,115	4,503	1,194	459

A diagnostic team from the Bexley child health centre visited Wagga and examined children referred by school counsellors and departmental staff. Provision was made in the team's programme to permit adequate interviewing and counselling of the parents of the children assessed.

An immunization team provided by the Division of Epidemiology immunized about half the eligible high school girls using the Ped-o-jet "gun". The programme was completed by the deputy medical officer of health and assistant nurse inspector with the assistance of baby health centre sisters and the school nurse. Because it was not possible to secure a full-time replacement for the speech therapist formerly based at Wagga, who transferred to the metropolitan area, the clinics established at Albury, Cootamundra, Narrandera, and Tumut were suspended. The part-time therapist appointed is fully committed in providing a service to the city of Wagga Wagga and immediate environs.

ABORIGINAL HEALTH AND WELFARE

The community health service to Aboriginal families in the Dareton area (Wentworth Shire) established last year continued to develop and expand. The opening of the community health centre provided an improved venue for the instruction of Aboriginal mothers in homecraft, family nutrition, and the planning of a food budget. The community nurse continued to perform a vital liaison role between medical practitioners, hospitals, official and voluntary welfare agencies and the Aboriginal families under her care.

PRIVATE HOSPITALS AND REST HOMES

Regular inspections of all rest homes were carried out by the assistant nurse inspector, who found the standard of patient care to be satisfactory on all occasions.

A new rest home, with a capacity of forty beds and known as "The Haven", opened in Wagga Wagga.

STAFF TRAINING AND CONFERENCES

Senior district officers, medical and inspectorial, attended the appropriate departmental inservice training courses and conferences.

A successful innovation was the partial integration of the annual district conferences for local government and departmental health inspectors and for departmental nurses, inspectors and nurses coming together for a halfday plenary session. In accordance with the concept of the development of community health teams the school nurse and the tuberculosis nurses attended the conference, previously restricted to baby health centre sisters and community nurses. The meeting was seen, in retrospect, as a definite contribution to an increased co-operation between local government and departmental officers and a greater awareness by each group of the problems of the other.

The medical officer of health addressed a 2-day seminar on community mental health services conducted at Kenmore hospital and attended by a number of nurses from this health district.

Two baby health centre sisters completed the inservice training course in community nursing.

HEALTH EDUCATION AND PUBLIC RELATIONS

The major activity was again the guidance and support given to the Cootamundra and District Hydatid Control Committee by the medical officer of health, his deputy and a health education officer with a particular interest in the control of hydatid disease.

By the end of the year the control programme had reached an advanced stage and had gained wide acceptance by both rural and urban dwellers within the Jindalee shire and Cootamundra municipality, while considerable interest was being evidenced by a number of other local authorities, particularly in the South Western Slopes area of the State. The success of this scheme validated the advice, given to the committee by the above technical advisors at the outset, that the best approach was the utilization of interested graziers as group leaders. They were selected to enable a complete coverage of the Shire and given a short but intense course of instruction in all aspects of hydatid disease to equip them to proselyte their peers by face to face discussion with their immediate neighbours. This they largely achieved.

BROKEN HILL HEALTH DISTRICT

Location: Bureau of Medical Inspection, 84 Bromide Street, Broken Hill, N.S.W. 2880

Medical officer of health: Dr J. T. Cullen, M.B., B.S.

STAFF

Senior medical officer: Dr J. P. D. O'Higgins

1 Radiographer

2 Clerical staff

Location: Central Baby Health Centre, Sulphide Street, Broken Hill, N.S.W. 2880

LOCAL AUTHORITIES

The Broken Hill Health District is confined to the County of Yancowinna. The County covers an area of 16,000 square miles, with the city of Broken Hill at the centre of the County.

The South Australian border forms the western boundary. The Broken Hill Health District is a centre of metal mining and pastoral industries.

VITAL STATISTICS

The population of the city of Broken Hill on 30th June, 1971, was 29,743 (preliminary census figures).

There were 615 live-births, and deaths of residents numbered 295.

Infantile Mortality: Deaths under 1 year of age numbered 9.

Of the total number of deaths of infants under one year of age, all occurred within one month of birth.

There were 4 stillbirths to mothers resident in the district.

COMMUNICABLE DISEASES

	1970	1971
Infectious Hepatitis	27	19
Tuberculosis	9	2
	36	21

EXAMINATIONS CARRIED OUT

	1970	1971
Examinations and interviews as medical officer of health	180	190
Post mortem examinations at the request of the coroner	35	23
Attendances at court and giving evidence in police cases	15	6
Examinations of arrested persons or prisoners	10	4
Examinations and reports on police constables *re* fitness for duty ..	16	11
Visits to gaol for examinations of prisoners	4	2
Government examinations—Public Service Board, Railways Department, Education Department	266	138
Attendances at Broken Hill Chest Clinic (includes staff TB injections) ..		1,553

HEALTH EDUCATION

Lectures have been given to nurses, schoolchildren and interested local bodies, and panel discussions have been conducted over the ABC's Local Radio Station by the Medical Officer of Health, the Senior Medical Officer and the Sister-in-Charge of Baby Health Centres.

WATER SUPPLY

Bacteriological examination of the water supply has been carried out. Examinations are made at the laboratory and from time to time they are compared with examinations from Sydney. Tests have proved satisfactory.

INDUSTRIAL MEDICINE

Industrial deafness examinations have continued with weekly visits by ear, nose and throat Specialists. During 1971, 449 mine employees were examined and a majority found to be suffering from sensori–neural deafness.

Blood lead estimations on samples taken during routine medical examinations produced satisfactory results. The results indicated an absence of lead absorption.

MATERNAL AND CHILD HEALTH

1. Maternal and Infant Care

Number of Baby Health Centres	5
Total attendances	14,633
Under 1 year	13,194
Over 1 year and under 2 years	926
Over 2 years	513
Total babies attending for the first time	722
Under 1 year	693
Home visiting—	
Total time spent visiting (hours)	539
Number of first visits	62
Number of subsequent visits	742
Number of mothers seen in hospital	537
Number of individual attendances at centres	1,522

Mothercraft classes are held weekly.

2. Child Health

Medical examinations of school children have been conducted in every school in the Broken Hill Health District. This includes High Schools and Primary Schools, both Department and private, as well as the four preschool Kindergartens in the area. Preschool and schoolchildren were also assessed and examined at the Central Baby Health Centre, Broken Hill.

Excellent liaison continues with the Royal Flying Doctor Service of Australia whose co-operation is greatly appreciated. Through its services the Departmental Medical Officer was transported to the outback schools situated at Wilcannia, Ivanhoe, Tibooburra, and White Cliffs.

The public school at Menindee was visited by road.

School of the Air. Prior to the medical officer's visits to outback areas, a message is relayed *via* "School of the Air" radio network advising parents and children that medical examination of homestead pupils will be available at the school to be visited. Correct immunization procedure in regard to these children has also been stressed via the network.

School population—	1970	1971
Departmental	6,680	6,862
Non-Departmental	1,140	1,193
Total	7,820	8,055
Number of local authority areas in which shire scheme is established	nil	nil
Total number of children examined	2,781	3,046
Percent of children examined	35·5	37·8
Number of parent interviews conducted by medical officer	323	407

Mantoux Testing in Schools. During the year a total of 728 third and fifth Form high school pupils were given Mantoux tests. These tests were conducted at the three Broken Hill high schools and also at the Wilcannia Public School.

Mass Rubella Immunization Campaign. This campaign, which commenced in December, 1970, with the immunization of 487 Broken Hill schoolgirls in the appropriate age group, continued through the current year when newcomers to Broken Hill in the 12- to 14-year age group were immunized as well as those girls in the city who attained the age of 12. In addition, all appropriate girls in Wilcannia, Menindee, and Ivanhoe were vaccinated. The co-operation received from both departmental and private schools was excellent and parental consent to immunize the girls was given in a vast majority of cases. There were no untoward reactions to the injections.

3. Special Services

Problems Readers Clinic. Since its inception in the latter half of 1969, 100 carefully selected children have been medically and psychologically assessed by the clinic and a great majority of these children have subsequently undergone Remedial Reading tuition from the team of Remedial Reading teachers involved in the project. These children are pupils of Broken Hill primary schools, both departmental and private, and children from outback schools in this Health District have also been included. Results of this scheme have proved most encouraging and rewarding and the improvement subsequently noted by principals and class teachers of this group of children have more than justified the existence of the clinic.

In third term, an additional group of children from Infants Schools was included in the plan and these children also showed improvement. This group had been commenced initially on a trial basis and it has since been decided that it shall become a permanent feature of the Clinic.

In June, Dr D. I. Guthrie resigned from his position as Medical Director of Rehabilitation at the Broken Hill and District Hospital. The Departmental Medical Officer was elected Chairman of the Problem Readers Clinic to replace Dr Guthrie in this position, which the latter had held since the Clinic's inception.

Formation of SPELD. The Committee of the Problem Readers Clinic decided that a Broken Hill Branch of SPELD should be formed and the co-operation of SPELD Association of New South Wales and of SPELD Association of South Australia was sought. Each State body agreed to support the plan and to provide a Guest Speaker for a public meeting to be held at the Broken Hill Civic Centre on 22nd October. The meeting, which was most successful and attracted an audience in excess of 300 persons, was most capably addressed by Dr D. O'Sullivan, a Sydney Neurophysician and President of the Australian Council of SPELD Associations, and by Mrs C. Moorhouse, an Adelaide educational psychologist. Subsequently a Broken Hill Branch of SPELD N.S.W. was formed and a committee elected following which a very well attended film and discussion evening on the subject of "Specific Learning Difficulties" was conducted in the city. An excellent press, radio and television coverage was given to our plans both prior to and following the public meeting and the wholehearted support received from the Broken Hill News Media was a major contributing factor to the successful establishment of the local Branch. Regular monthly meetings of our SPELD Committee will be held during 1972.

4. Aboriginal Health and Child Welfare

Immunization of Aboriginal children against poliomyelitis, pertussis, diphtheria, and tetanus continued during the year and the procedure was enlarged to include the township of Ivanhoe. Accurate recording of the children's immunization status is an important feature of this work.

In May a successful campaign was conducted in Wilcannia to immunize Aboriginal children between the age of 1 and 4 years against measles. A total of fifty-nine children were immunized against this illness by the Senior Medical Officer and no untoward reactions were noted. A similar project was later carried out on the twenty-two Aboriginal children in this age group who are resident in Menindee. Aboriginal infants are immunized against tuberculosis with B.C.G. vaccine prior to their mother's discharge from hospital after confinement.

Regular visits are made to the various outback schools which have Aboriginal pupils. These schools include the Aboriginal Mission School at Wilcannia conducted by the Sisters of Compassion. When defects are noted, arrangements are made for the treatment of the children's disabilities.

The matter of dehydration, particularly that subsequent to Gastroenteritis, among Aboriginal children in the Wilcannia area is a matter of concern and a Committee, which includes the Senior Medical Officer, was formed with the object of reducing the incidence of this condition. A valuable consequence of the above Committee's discussions resulted in a decision to provide Baby Health Centre facilities in Wilcannia. This service commenced in February and, while designed mainly to care for Aboriginal mothers and children, the attendance of European mothers and babies is also encouraged. The initial response to this project was disappointing, but, acting on the suggestion of the Director, Bureau of Maternal and Child Health, arrangements were made for Sister D. Connolly, Sister-in-Charge, Broken Hill Baby Health Centres, to conduct the service at Wilcannia on a regular fortnightly basis, her visits being made on the Royal Flying Doctor Service aircraft. This arrangement has proved most successful and since Sister Connolly's first conduction of the clinic on 19th March, the average attendance figure is twenty-five, of which a majority are Aboriginal. Since the introduction of the above facilities the Aboriginal babies, in general, appear better cared-for and there have been fewer admissions to Wilcannia Hospital of infants with feeding problems. Stressing the vital importance of early medical treatment of Gastro-Enteritis has lessened the incidence of dehydration. At the end of May, Dr A. Douglas, Director, and Miss E. Wilson, Nursing Supervisor, Bureau of Maternal and Child Health spent 2 days in Wilcannia during which visit a meeting was convened with Hospital Board members, Medical and Social Welfare personnel and Social Service officials. The object of the meeting was to discuss Aboriginal Health and Welfare. Subsequent to this meeting the Director advised that provision has been made in the estimate for Aboriginal health for 1971–72 to provide a health centre at Wilcannia on land adjacent to the Wilcannia Hospital. The Director also advised that the Child Welfare and Social Welfare Department were in favour of the suggestion that their welfare officer in Wilcannia, Mr M. Rodden, could use an office in this centre, it being felt that such an arrangement would be a great benefit to co-operation of Health and Welfare services to the Aborigines. It is anticipated that the new Health Centre will be erected and operational in 1972.

On 11th December, a new Methodist nursing centre was opened at Menindee by the Minister of Health, Mr A. H. Jago. This new Centre provides increased facilities for Community Health Care in the Menindee area, wherein a number of Aboriginal families reside.

Training of Aboriginal Girls as Nursing Aides. Under the above scheme which is sponsored by the Commonwealth Government and administered by the New South Wales Department of Health, two Wilcannia girls have been accepted for Nurse Aide training at the Broken Hill and District Hospital and will commence duties early in 1972. To date no Aboriginal girl has qualified as a nurse aide from this hospital and it is hoped that these girls, who are sisters and are aged 19 and 17 respectively, will become the first members of the local indigenous population to achieve this status.

ABORIGINAL COMMUNITY HEALTH SERVICES

Population. The Aboriginal population is still in the vicinity of 520. Wilcannia 420, Ivanhoe 50, and Menindee 50. There are no Aborigines residing in White Cliffs.

Housing. There has been no change in the housing situation. A small number of families are living in better type homes and are caring for them very well; however, the majority are housed in substandard galvanized shacks on the reserve and in red sandy country known as Mallee. These homes have very poor water supply and sanitation.

Social Amenities. Since the last report there has been a club formed known as the Aboriginal Recreation Centre. One social function was held in this club prior to Christmas and was a great success. It is anticipated that more of these will be held in the future. The committee of this club holds monthly meetings in the clubrooms, but unfortunately very few of the Aborigines attend.

Infant Mortality. Only one infant death occurred during this year. It was an accidental death brought about by scalding.

Activities. Home visits have been continued. During these visits the mothers of young children have received instructions on nutrition, hygiene and child care in general.

Transport of Aborigines seeking specialist treatment to Broken Hill and other centres is being arranged. Routine visits to the local school have been made. During these visits hearing and vision tests have been carried out resulting in several children being treated for defective sight and hearing. A close check has also been kept on the incidence of pediculosis among school children and the young preschoolers.

All children attending the Baby Health Centre have been immunized, as well as the school-children. A clinic was conducted by the Senior Medical Officer to immunize the children against Measles, and had a very good attendance.

General Health Matters. The Laundry Block erected at the Reserve has been used to the fullest extent. This has resulted in the people on the whole having a much cleaner appearance. There has been no further progress on the proposed sewerage system for the Reserve. It is felt that when this is achieved the incidence of infection will be lessened. There have been no notified cases of infectious hepatitis among the Aboriginal population, but a high incidence of gastro-enteritis.

Summary. It is felt that 1971 has been a year of some progress. Although complete assimilation of the Aborigines is a very long way off, it is felt that some of these people are making a very real effort to improve their standards. The fact that they are prepared to come for advice without prompting, and will confide on personal and family matters is an achievement in itself.

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SCIENTIFIC SERVICES

DIVISION OF ANALYTICAL LABORATORIES

Director and Government Analyst: Mr L. G. Clark A.S.T.C. (Chem), A.R.A.C.I.

Location: Joseph Street, Lidcombe

STAFF

The establishment consisted of:

37 Analysts,

6 Microbiologists,

21 technical officers and technical assistants,

17 laboratory attendants (4 being part-time),

6 clerical staff.

Various staff are also shared with the Division of Occupational Health and Pollution Control and the Institute of Clinical Pathology. These include a librarian, telephonist, maintenance staff, cleaners, storeman and stores assistants.

The samples and cases examined in 1971 are tabulated below together with comparative figures for 1970. Details of the sources from which samples and cases were received are given in Appendix 1.

Section	1971	1970
General Foods	1,545	919
Milk and Dairy Products	8,468	8,515
Meat and Meat Products	4,442	4,416
Food Bacteriology	1,631	1,710
Pesticide Residues	782	256
Water (chemical)	3,191	2,618
Water (bacteriological and algal)	10,823	7,629
Water Fluoridation	13 inspections	49 inspections
	509 samples	334 samples
Toxicology	921 cases	747 cases
Biochemical	2,139	1,788
Blood Alcohol	2,035	1,790
Drug	247 cases	304 cases
Criminal Investigation	125 cases	112 cases
Miscellaneous Products	45	122

GENERAL FOODS SECTION

One thousand five hundred and forty-five samples were examined, an increase of 68 per cent over the previous year. The examinations carried out included the following:

Alcoholic beverages	377
Soft drinks, etc.	189
Colouring matters in food	38
Cooking oils and margarines	40
Alleged abnormal taste or smell	32
Foreign matter in foods	90
Alleged illness due to food	60
Metals in food	389
Mycotoxins in food	37
Quality Assessment	73

Alcoholic Beverages

Two hundred and thirteen beer samples were analysed but only five failed to comply. Thirty-five of the 118 fortified wine samples analysed did not comply with the standard.

Thirty-six spirit samples were analysed, thirty-one of which were below the prescribed standard. Food inspectors test a considerable number of spirit samples in hotels by the Sykes hydrometer but only submit those samples for analysis which do not comply with this test.

The two samples of spirits submitted by the Brands Protection Association did not match the corresponding vat samples, indicating that these bottles had been tampered with.

Fruit Juices

The specific 2:4 dinitrophenylhydrazine method for vitamin C was introduced to replace the phenolindophenol method which lacks specificity. Thirty-five samples of fruit juices were examined by this new method and eight were found to have a low vitamin C content and were deficient in fruit juice.

Foreign Matter in Food

Ninety-one complaints were evaluated. Glass fragments were found in a bottle of soft drink and mould growths in wine. An unopened bottle of milk contained a clothes peg, another a piece of mouldy apple peel, a bottle of cream was full of a black deposit of boiler scale and another milk bottle was covered on the inside of the glass with a black burnt material. This was a short period after cracker night and the bottle had apparently been used for a skyrocket holder.

Illness Due to Food

Sixty samples were examined as a result of complaints of illness. A bottle of lime flavoured soft drink containing a 1 cent piece was found to have 25 p.p.m. of dissolved copper which may well have caused vomiting. A sample of cordial was found to contain 530 p.p.m. of zinc. A group of school children had become ill shortly after drinking the cordial. The diluted cordial had been stored over the weekend in a galvanized garbage bin fitted with a spiggot. This is a very dangerous practice as it can cause severe illness but there is no likelihood of lasting consequences from this particular incident.

Metals in Food

Public interest in the mercury content of seafood has remained high and the laboratory has analysed 233 samples of fresh fish, crustacea and molluscs and 70 samples of canned fish for mercury, continuing the survey which was commenced late last year. A continuous monitoring of mercury levels in sea foods is now carried out. The mercury is determined by flameless atomic absorption spectrophotometry.

Only ten fresh fish and one sample of canned fish exceeded 0·5 p.p.m. which is regarded as a realistic action level in marine foods.

Four samples each of apples, water, mud and plain flour were examined for mercury, but none of these exceeded 0·03 p.p.m.

Twelve curry powders were analysed for lead as a previous survey had shown excessive lead in some samples. Only one sample did not comply with the regulations and contained 3 p.p.m. lead.

A survey was carried out on glazed pottery and on commercial crockery following on overseas reports of illness and one death resulting from the storage of acid beverages in pottery containers. Some firing processes, such as the Raku process are too low in temperature to render the lead glaze completely insoluble. Some of the lead frits supplied have also been improperly prepared.

Any extractable heavy metals are leached out of these containers with a test solution of 4 per cent acetic acid which is left standing at room temperature for 24 hours. Fifty-four articles were examined and some samples gave alarming results. Eleven samples exceeded the recommended American action level of 7 p.p.m. Three items of tableware (saucers and plates) gave 1260, 247, 221 p.p.m. lead respectively. This was obtained from the coloured glaze or patterned decal applied at a lower temperature over the original white glazed crockery. These figures stress the need for strict control of tableware sold to the public. Unfortunately our food regulations do not as yet have any control over the sale of food containers or appliances.

Mycotoxins

Thirty-seven samples of peanuts, soy sauce, walnuts, and almonds were examined for mycotoxins during the year. This toxin, which is produced by mould growth, principally the aspergillus species, has in recent years come to the attention of food chemists and microbiologists because it is a powerful carcinogen. One soy sauce, which is manufactured using aspergillus mould, was found to contain aflatoxin B, and aflatoxin G.

Quality Assessment

Nineteen samples out of a total of twenty-three samples of frozen fish examined were found to be deteriorated and unfit for human consumption. Some of these samples were analysed for volatile amines, including trimethylamine oxide, as it is anticipated that the *Codex Alimentarius* Standard will set limits for these compounds. Such chemical indices are unreliable as the sole guide in establishing the quality of fish fillets since the relationship between the volatile amines and fish quality is not constant, particularly with some species of fish. Some fish unsuitable for human consumption do not reveal excessive amines.

The Consumer Affairs Bureau referred complaints regarding canned mushrooms to the Pure Food Branch who in turn submitted sixteen samples for analysis. Ten of these were found to be unsatisfactory, the drained weight of mushroom being low compared with the American standard. Seven samples of mushrooms in butter sauce were examined. Only three were found to contain butter and then only in a quantity less than 1 per cent. The so called butter sauce was merely a starch gel containing about 1 per cent total fat.

Fifteen out of the sixteen samples of dates examined were infested with mites and were unfit for human consumption.

Food Additives

Following upon a request from the Food Analysis subcommittee of the National Health and Medical Research Council an investigation of the method of analysis of the food additive, sodium stearyl fumarate in bread was evaluated by this department and the Commonwealth Customs Customs Laboratories. This request resulted from the membership on this subcommittee of the Government Analyst.

The published methods were found to be unsatisfactory, but some success has been achieved using a method based on the determination of the stearyl alcohol hydrolysed from the sodium stearyl fumarate. It has been shown that the fumaric acid residue (the basis of previous methods) could not be successfully isolated because of its reactivity.

An investigation of methods for the determination of S.A.I.B. (sucrose acetate isobutyrate) in soft drinks was carried out during the year and a gas chromatographic method has been found satisfactory. It is possible that this may be allowed as a weighting agent in soft drinks in place of the brominated vegetable oils which are to be phased out of use. It is hoped further work will be done in 1972 to enable this to become a routine operation.

Each application for the use of a new food additive which is made to the Food Additives subcommittee of the National Health and Medical Research Council is required to include a method of analysis for this additive in the food products concerned. These are evaluated on paper by the members of the Food Analysis subcommittee of the National Health and Medical Research Council. When it is considered that these methods should be critically evaluated in practice, studies may be carried out in the laboratories of the Commonwealth and State Government Laboratories (including our own) which are represented by the members of this subcommittee. The demands for routine work by these Government Laboratories at the present time, however, is such that only a few new methods a year can be actually evaluated between them.

Edible Oils

Identification of fats by the gas chromatographic determination of the methyl esters of the fatty acids prepared by transesterification with sodium methoxide in a sealed ampoule has been successfully introduced and has been used on a number of oils of known origin and on twenty-two samples of oils and eighteen samples of margarine. This method has also been successfully applied to the identification of butter in mushrooms in butter sauce and also to the detection of foreign fat in cocoa products.

Other Analyses

Thirty-eight samples were examined for artificial colour. One fairy floss was found to contain rhodamine B, a non-permitted colour. One sample of bread rolls contained tartrazine and tinned salmon was found to contain artificial colouring.

The alpha amylase test for a check on the pasteurisation of eggs was evaluated and five samples of frozen eggs were tested. Four did not pass the test, indicating inadequate pasteurisation.

Thirty-two miscellaneous samples of foods and drinks were analysed following upon complaints received from the public. Nothing abnormal could be associated with nineteen of these samples. The others were either stale, decomposed or in a dirty container.

Seven 5 lb packs of frozen scallops were tested for drained weight, five of these were most unsatisfactory and contained only 59 per cent to 69 per cent of solid flesh.

Half of the six vanilla essences tested failed to comply with the regulation.

In collaboration with the Department of Labour and Industry, the equipment for handling and analysing bread for dry solids content has been installed in the food laboratory. This equipment consisted of two grinding mills, a meat slicer and a drying cabinet and will allow regular samples to be analysed for that department.

The hydroxymethyl furfural test for honey, which is a test prescribed by the *Codex Alimentarius* Commission, was evaluated. This test is a measure of the thermal history of honey and hence its quality. The sugar content of seven Australian honeys was determined both by Munson & Walker and polarimetry. All satisfied the regulations.

It is with regret that we announce that the officer-in-charge of this laboratory, Mr Milton N. Brady died shortly after the end of the year. The greatly increased scope and complexity of the work carried out in this Section, and its value to the public, reflects great credit upon the leadership that he brought to the section. He was also the officer responsible for first organizing the Pesticides Section of the Division several years ago. The work of this Section has greatly enhanced the reputation of these laboratories.

MILK AND DAIRY PRODUCTS SECTION

Eight thousand four hundred and sixty-eight samples were examined during the year, these being submitted by various authorities—the Food Inspection Branch, Sydney City Council, municipal and shire councils, country Health Districts and the greatest number was received from the Dairy Industry Authority New South Wales.

Milk

Seven thousand eight hundred and seventy-six milk samples were analysed in the year. 225 of these failed to comply with the Pure Food Regulations, 87 samples were deficient in milk fat, 106 showed the presence of either added water or low milk solids not fat, and 32 samples were improperly pasteurized.

Dairy Products

Five hundred and ninety-two dairy products other than milk were examined during the year: 457 samples of cream were tested and 3 found to be deficient in milk fat, 2 were improperly pasteurized and a sample contained foreign fat. From 47 butter samples 3 contained excessive water, 4 contained fat other than milk fat and a frozen self-basting chicken was labelled to contain butter but was found to contain a mixture of different fats; 40 ice creams and gelatos were analysed—7 were found to have a low fat content, 5 contained fat other than milk fat and 2 had a low fruit juice content. Of the 11 yoghurts tested, 2 were deficient in fat content. On 3 dried milks the directions for use were misleading.

Thirty-one samples of miscellaneous products were examined including cheeses, flavoured milk, flavoured ices, cream mix, milk ices, ice cream mixtures, milk powders, evaporated milk, imitation milks, reconstituted milk, fortified milks, and margarines. Three milk bottles were found to contain foreign matter, comprised of moulds, dirt, and plastic materials.

New Methods

During the year various new methods were carefully evaluated and introduced into the section. These methods included those for detection of fats other than milk fat in ice cream and frozen dairy products and correlation of solids-not-fat with protein determined by Pro-Milk Tester. Work began on the determination of gelatine in cream mixture and on differentiation of goat and cow milk.

The detection of foreign fats in ice cream and frozen dairy products is done on the sterol fraction of the unsaponifiable matter. This is isolated by thin layer chromatography and the beta-sitosterol is then determined by gas chromatography.

Dr S. Frater, Officer-in-Charge of the section, is a member of the Standards Association of Australia Committee on Milk and Dairy Products. During the year a number of standards were completed to become new Australian Standards. These included methods for the determination of undenatured whey protein nitrogen in non-fat dried milk and standards for dairy thermometers.

A small working group consisting of experts from the N.S.W. Department of Agriculture, the dairy industry and this Division was formed during the year following upon invitations made to those concerned by this Division. It is anticipated that this group will unify methods of analysis of milk and dairy products, undertake collaborative analyses and research projects and assist in providing a uniform interpretation of analytical results.

A statistical analysis was carried out on a large series of analytical results obtained in this Section for solids-not-fat (S.N.F.) and milk protein as determined by the Pro-Milk Tester (dyebinding method). The size of the standard error and of the standard deviation made it clear that there is no direct correlation between these two parameters. This is partly explained by the natural variation that occurs in the lactose component of the solids-not-fat. Whilst the protein as determined by the dyebinding method cannot be used to directly determine the S.N.F., it is still a useful figure to have in those cases where the S.N.F. is low as it will confirm that an adulteration of the sample with water has taken place. It is therefore a useful supplement to the freezing point determination.

MEAT PRODUCT SECTION

Four thousand four hundred and forty-two samples were examined during the year, 3,911 of these being submitted under the Pure Food Act; 139 out of 212 samples of meat, fresh and minced, were found to be preservatized with sulphur dioxide, and 6 with ascorbic acid. The addition of preservative to these classes of meat is prohibited. The reason for this high proportion is that samples are routinely examined in butchers shops by the malachite green test and only those which are positive or doubtful by this test are submitted to the laboratory.

Two thousand seven hundred and ninety-eight samples of sausages and sausage meat were examined and 325 contained excessive amounts of sulphur dioxide and 667 (23·8 per cent) contained excess fat, a similar proportion to that found last year. This proportion of adulterations is much too high and reflects little credit on the retail meat trade.

Nine samples had starch contents outside the permitted range, thirteen contained insufficient meat and seven contained foreign meat (e.g. mutton in pork sausages). The last two offences are undoubtedly much more widespread than these figures would indicate since the laboratory does not routinely test all samples for these parameters. It is noted that there is no standard for pork sausages and it is likely that many butchers would not regard the presence of a proportion of meat other than pork in pork sausages as being an offence.

Five hundred and thirty-nine samples of smallgoods were analysed, an increase of approximately 70 per cent over the previous year. Sixty-seven contained excessive amounts of nitrite, and fifteen contained excess sulphur dioxide.

Five hundred and thirty-one samples of minced meat, sausages and sausage meat were submitted on behalf of the Government Stores Department in connection with supplies to government institutions. The numbers of these samples had increased greatly over the past few years. As a full analysis is required on each sample a very considerable strain was placed on the resources of the section. As a result of representations made to the Government Stores Department, the numbers have recently been reduced by two-thirds. The samples were previously collected on a regular basis and there was reason to believe that they were not representative of the average quality of the meat being delivered to institutions. They are now being collected randomly and it is believed that this new policy will give a more effective control over these products. Seventy-two of these samples were found to be deficient in meat content and thirty-five found to contain excess fat. Eight samples supplied as minced beef were found to contain a proportion of mutton.

After lengthy delays the section has now received apparatus for immunoelectrophoresis. This sensitive technique should allow for more positive identification of various protein additives and is at present being evaluated for the detection of foreign meats. It is hoped that this and related techniques will be of considerable value in the detection of additives such as casein and enzymic tenderizing agents.

During the latter half of the year a considerable amount of time was devoted to the analysis of meat pies, an elaborate and time consuming procedure. One hundred and fifty-five were examined and eighty-six were found to be deficient in meat content which is required by regulation to be at least 25 per cent of the weight of the pie. Some were found to be as low as 6 per cent—a particularly poor product especially considering that they may well form an item of school children's lunches.

A number of samples of fried chicken were received during the year, following complaints by members of the public that the products were rabbit. They were found in all cases to be chicken. Due to its price relative to that of chicken, the use of rabbit is most unlikely. It is probable that most of these complaints arose out of the practice of suppliers of chicken pieces cutting these in such a way as to provide portions of substantially uniform meat content. These are supplied in bulk to various vendors of cooked chicken pieces. Some of these cuts are not as readily identified by the public as the traditional cuts of chicken.

Casein, used as a substitute for meat and as an emulsifying agent, was detected in a number of samples of sausages. The recently published method of Kuschfeldt *et al*, based on the peculiar heat stability of casein was used. This method was recently successfully tested in court. It is hoped that sensitive immunoelectrophoretic techniques can be adapted to improve the detection of casein in the future.

The officer-in-charge of the Section was required to attend Court on twenty-one occasions during the year in connection with samples analysed by the section. The increased penalties now in force for meat offences have led to a much greater number of contested cases, and the Court work involved has placed a considerable strain on the facilities of the Section.

One case concerned the use of an enzymic tenderizing agent (papain) on meat and the court sat for a total of 12 days. The use of this substance is not permitted by the regulations. At the end of this period, the Department decided not to proceed with the charge upon the advice of the Crown Law Department when it was found that the third part sample had deteriorated during storage.

Further legal argument had yet to be heard. The defence in this matter introduced such a large volume of evidence that the issue became thoroughly confused. It was suggested by the defence that any tenderizing agent present could have been produced by bacteria, even though the method took specific precautions against this possibility. It may be necessary to isolate and identify papain by more highly specific methods before further legal action can be taken.

FOOD BACTERIOLOGY SECTION

One thousand six hundred and thirty-one samples were examined during the year, the major categories of which were as follows:

Oysters	128
Dairy Products	99
Meat	26
Prawns	63
Hospital Survey	920
Disinfectants	40
Canned Food	157
Alleged Food Poisoning	108 (30 outbreaks)
Miscellaneous	90

A food hygiene survey was carried out at the Prince Henry Hospital, Sydney. Nine hundred and twenty samples of food and related articles were examined in connection with this survey. *Salmonella typhimurium* was isolated from frozen chickens and freeze dried egg albumin. Large numbers of coagulase positive *staphylococcus aureus* were also isolated from these sources. *Clostridium perfringens* was isolated from a large number of raw materials used in the preparation of food. Many such raw materials were also found to contain large numbers of enterococci and faecal coli, both indicators of faecal contamination. An examination of slicing machines and carving knives revealed the presence of large numbers of faecal coli and enterococci. Some milk samples examined were found to be faecally contaminated. All disinfectants examined were found to be ineffective at inuse dilution.

It should not be inferred from this study that the bacteriological standard of food is lower at Prince Henry Hospital than in other hospitals. Rather it indicates the potential dangers present in the food services of all hospitals. These dangers could be reduced by regular bacteriological testing of food, raw materials, disinfectants, etc., and the provision of adequate programmes of food hygiene instruction in hospitals. As far as is known, no hospital in N.S.W. carries out bacteriological food testing, nor conducts regular classes in food hygiene.

The examination of locally produced prawns and imported prawns was continued. Seventeen out of thirty-eight samples of locally produced prawns available in fish shops were found to be faecally contaminated. Eleven out of thirty-eight were found to be contaminated with coagulase positive *Staphylococcus aureus*. Four isolates of this organism were found to be derived from a human source, indicating a very poor level of hygiene exercised in their preparation. All of the prawn samples imported from India (ten samples) were found to be faecally contaminated and two of these prawn samples were found to be contaminated with coagulase positive *S. aureus*. Ten out of fifteen of the prawn samples imported from South East Asia were found to be faecally contaminated and three out of fifteen of these were found to contain coagulase positive *S. aureus*.

A survey to determine the microbiological status of imported cheeses, sampled at the consumer level was commenced during 1971. Some products, notably fetta cheese, contained large numbers of faecal coli and enterococci. No coagulase positive *S. aureus* organisms were isolated from any product. This project, which is being conducted with the State Department of Agriculture, will continue throughout 1972.

A survey to determine the microbiological status of smallgoods was commenced during 1971. On the basis of a small number of samples examined it is felt that a more intensive investigation of smallgoods should be made. Many samples were found to be faecally contaminated. The stocking

net around many samples was found to be heavily contaminated with faecal indicator organisms. Very few smallgoods manufacturers are equipped to carry out microbiological testing of the raw materials, finished products, equipment, floors, benches, etc. The standard of hygiene in such plants, particularly small factory units, tends to be very poor. This fact has been established by factory inspections made by food inspectors. Probably the most effective way of improving this situation would be following up each factory survey with an adequate instruction in the principles of food hygiene.

One hundred and twenty-eight samples of oysters, both in the shell and bottle were collected from various parts of the State for microbiological examination. Twenty-four (18·8 per cent) of the samples were found to exceed the limits prescribed under the Pure Food Regulations. Many samples were collected by food inspectors from the Georges River. The main source of pollution in this area still appears to be overflow from septic tanks, run off from garbage tips and small farms. Sewage outfalls are thought to play a prominent part. Oysters should not be harvested from the Georges River shortly after heavy rain.

A survey was undertaken to determine the bacteriological effectiveness of disinfectants available to the public at the retail level. This survey was carried out in co-operation with the Health Inspection Branch. Of forty disinfectants examined twenty-six were found to be ineffective at the manufacturers recommended dilution. This survey will continue throughout 1972.

Thirty cans of Vichyssoise gourmet-type soup were examined for the presence of *Clostridium botulinum* organisms and the toxin produced by these. No can was found to be positive for either toxin or organism. Two cans were innoculated with *Clostridium botulinum* type A and type B as a test of our detection techniques and were found to support growth and produce toxins of these two organisms. The examination of the Bon Vivant brand Vichyssoise soups collected from retail shops in Sydney metropolitan area followed a report that an outbreak of botulism had occurred in the United States and had been traced to the consumption of this product. Two fatalities were recorded in this outbreak. Because the soup mostly contained potato it was thought that the type of *Clostridium botulinum* involved was type B. Type B is commonly isolated from areas of agricultural importance in the United States. Type A on the other hand is found mostly in virgin soils. The United States Department of Health requested that all foreign countries follow their action in having all products produced by the Bon Vivant company withdrawn from sale. The Bon Vivant company has since gone into liquidation. Canned soups examined in the United States, from a batch other than the one implicated in the poisoning were found to contain toxin of type A *Clostridium botulinum*. The affected batch was identified but had not been dispatched to Australia. A further investigation undertaken by the United States Department of Health revealed that a faulty retort had been responsible for the underprocessing of this particular batch.

The Food Bacteriology laboratory is now using a fluorescent antibody technique for the rapid detection of vegetative cells of *Clostridium botulinum*.

A survey to determine the microbiological status of goat milk was undertaken in 1971. Twenty samples were collected from various parts of the State and examined. It is well known that goat milk is not pasteurized and is frequently sold privately for consumption by children. Results obtained so far indicate that in many cases goat milk is handled and stored under poor conditions of hygiene. This survey is being carried out in co-operation with the Dairy Bacteriology laboratory of the State Department of Agriculture.

The officer-in-charge of the Food Bacteriology Section was closely associated with the setting-up of the Food Microbiology Group of the Australian Institute of Food Science and Technology. The inaugural meeting was held in the laboratories of this Division and approximately eighty persons inspected our facilities. It is the intention of this group to work with the Department in setting-up regular courses in food hygiene for supervisory staff in the food industry. It is considered that many persons employed as food supervisors in public and Departmental hospitals will also benefit from this scheme. Plans were also made by this group to organize a National School of Public Health Microbiology to provide practical instruction in this area for technicians and scientists in the food industry.

PESTICIDES SECTION

Seven hundred and eighty-two samples were analysed during the year compared with two hundred and fifty-six the previous year. Most of the work was related to the determination of chlorinated pesticides with only a few samples being examined for organophosphates and herbicides. The type of samples analysed were as follows:

Cows milk	70
Human milk	22
Blood	228
Human fat	140
Foods	139
Water	51
Toxicology specimens	45
Animal specimens	60
Other samples	27

Milk and Human Milk

The survey into cows' milk was continued and the residue levels found were similar to the previous year. The average level of total DDT at 0·005 p.p.m. was considerably lower than found in 1970 (0·014 p.p.m.) and the average level of dieldrin was similar to the previous year. A break down of the results in relation to *Codex Alimentarius* tolerances is given below:

Pesticide	per cent	Mean p.p.m.	Codex level p.p.m.	percent sample exceeding Codex level
Total DDT	67	0·005	0·050	Nil
Dieldrin	78	0·002	0·003	10
BHC and its isomers	14	Trace	0·004	2
HCB	20	Trace	0·010	Nil
Heptachlorepoxide	26	Trace	0·002	Nil

Samples of milks and stomach contents of cows which had died from symptoms resembling organophosphate pesticide poisoning were received. Thiodan was sprayed as an insecticide on the fruit orchard and the spraying plane accidently sprayed the grazing fields. Contamination was sufficient to kill four cows grazing near the neighbouring orchard fence. All samples of milk and stomach content from the dead cows contained thiodan and the milk from the remaining cows showed trace amounts of thiodan. No trace of thiodan was detectable in the milk after three days and the milk was released for sale.

A pilot survey of chlorinated pesticide residues in human milk was carried out last year and the results were startling. Every sample was found to have the fungicide hexachlorobenzene and the level of other common pesticides was higher than recommended for cows' milk by the W.H.O. Since only ten samples were analysed, it is not considered a representative sample of the N.S.W. population. A survey of one hundred samples from Sydney metropolitan and other Health Districts is being carried out. Twenty-two samples were analysed during the year and the following mean results were obtained—0·050 p.p.m. of total DDT, 0·004 p.p.m. of dieldrin and 0·009 p.p.m. of HCB. No BHC was found.

Blood

Two hundred and twenty-eight specimens of blood were examined and this is an increase of 400 per cent over the previous year. These analyses are likely to increase even further, since people who work with pesticides are now encouraged to have their blood checked for pesticide levels. Specimens were submitted by Medical Officers of Health, the Division of Occupational Health and Pollution Control, medical practitioners in general practice and hospitals.

Because of the shortage of data on blood, it has been difficult to determine what is the normal background level of the pesticides. An extensive survey of organochlorine pesticides in human blood was therefore initiated by the division. Blood from 237 people was examined in the survey. 185 people had some occupational exposure to pesticides and 52 people had no known exposure to the pesticides. Neither exposed nor unexposed people showed any apparent sign of intoxication but there was a marked difference in the level of pesticide. The presence of HCB was of special interest as it was present in over 97 per cent of the cases. The presence of HCB in human blood has not been reported in the literature. The results are as follows:

Pesticide	Mean p.p.m.	
	People with known exposure	People with no known exposure
HCB	0·056	0·022
Total DDT	0·057	0·017
Dieldrin	0·031	0·002
Aldrin	0·002	None
BHC and its isomers	0·029	0·003
Lindane	0·004	None
Heptachlorepoxide	0·006	0·003

Patients with high pesticide level are re-examined at weekly intervals until their levels have dropped to acceptable level. There are no recommended maximum allowable concentrations for human blood. An article entitled "Hexachlorobenzene and Other Organochlorine Pesticides in Human Blood" has been submitted to the *Medical Journal of Australia*. It is hoped that the medical practitioners in general practice and others involved in the analysis of pesticide will be able to interpret the results of pesticide in human blood on the basis of this work.

Human Perirenal Fat

The human perirenal fat survey which was undertaken to give an indication of pesticide residue levels existing in this community was commenced in 1969. Specimens of perirenal fat were taken post mortem from a random selection of bodies at the city morgue, Sydney, by the Division of Forensic Medicine. All age groups were included with approximately equal numbers of each sex chosen. Eighty-five samples have been analysed to date.

The results are as follows:

Pesticide	Mean p.p.m.	Range p.p.m.	Remarks
Total DDT	4·68	0·18–19·6	.....
HCB	1·32	Trace– 8·20	.....
Dieldrin	0·21	Nil– 2·60	.....
Aldrin	..	Nil– 0·20	9 positive samples
BHC and its isomers..	..	Nil– 2·15	6 positive samples
Heptachlorepoxide	..	Nil– 0·50	3 positive samples
Lindane	..	Nil– 0·33	6 positive samples

"Trace" amounts are less than 0·001 p.p.m. Whilst most overseas surveys report the presence of BHC, this laboratory has found only trace amounts in a few samples. Hexachlorobenzene (fungicide) was detected in all samples. No other survey except that published by this division has quoted the presence of HCB in human fat. Presence of HCB is brought about by the ingestion of food stuffs, particularly eggs and meat which contain HCB. It is an offence to use treated wheat for stock feed or poultry feed, but this offence is committed by some unscrupulous farmers and manufacturers of stock food. Various steps are being taken by the Department of Health to eliminate this highly undersirable practice. An article entitled "Hexachlorobenzene in Human Fat" by this Division was accepted for publication in the *Medical Journal of Australia*. The presence of HCB was emphasized and it was also shown that commonly known chlorinated hydrocarbon pesticides (DDT, Dieldrin, etc.) were within the ranges found in surveys conducted overseas.

The perirenal fat survey was extended to the Territory of Papua and New Guinea (T.P.N.G.). Fifty samples have been analysed to date. It is interesting to compare the levels of the concentration of pesticides found in the body fats in N.S.W. population with those found in the body fat of T.P.N.G. population. The level of HCB was lower in that country than in N.S.W. but the level of DDT was higher in T.P.N.G. population than in the N.S.W. population. This is probably a result of the large amounts of DDT which are used in that country in antimalarial campaigns.

Total DDT was found to range from 0·04–58·1 p.p.m. (average 6·4 p.p.m.), dieldrin ranged from Nil–0·72 p.p.m. (average 0·18 p.p.m.), HCB ranged from Nil–2·80 (average 0·25 p.p.m.).

Water

Fifty-one samples from drinking water supplies were submitted by the Division of Occupational Health and Pollution Control, general medical practitioners and councils. Only trace amounts of chlorinated pesticides were detected in drinking water. Some samples were received from the Division of Occupational Health and Pollution Control where the pesticide sprayers had accidently sprayed into drinking tanks. Significant amounts of dieldrin, heptachlor, and heptachlor epoxide were detected in those samples. The water tanks were cleaned and refilled with fresh water. Analysis of water from the contaminated tanks gave satisfactory results after cleaning.

Samples were also received from Blacktown Council where one of the pesticide manufacturers had discharged diazinon into the Parramatta River. Diazinon was detected in all samples. The firm was convicted for the contamination of the Parramatta River.

Foods

One hundred and thirty-nine food samples consisting of eggs, pork, beef, lamb, sea foods, and other food samples were examined. Many of the food samples were analysed because of complaints made to the Pure Food Branch but none showed significant levels of contamination.

The level of HCB residues in eggs was found to be between a trace and 4·85 p.p.m.; only one sample being higher than 1 p.p.m. There was a general decrease in the level of HCB in eggs. This is due to poultry farmers becoming aware of the HCB problem in eggs and the policy of the Egg Board of N.S.W. not accepting eggs for sale which contain significant levels of HCB.

Last year a survey was commenced to investigate the pesticide levels in animal fat. Lard, beef, and mutton far were analysed. Sixty-two samples have been examined from the Riverina district. It is hoped to extend this survey in other Health Districts in 1972. Forty-five per cent of the samples were over the *Codex* level for HCB, four per cent for DDT and 21 per cent for dieldrin.

Pesticide	Range p.p.m.	Mean p.p.m.	Codex level p.p.m.
HCB	Nil–58·80	4·66	1·0
Total DDT	Nil–23·00	1·02	7·0
Dieldrin	Nil– 9·94	0·07	0·2
Lindane*	Nil– 2·41	..	2·0

*Lindane was detected in only one sample.

Toxicology

Forty-five specimens were received from the Toxicology Section. Most specimens showed the presence of organophosphate pesticides except in eleven specimens from one case where three elderly people had drunk chlordane (an organochlorine pesticide) solution which had been stored in a sherry bottle. Two of these people died.

Sixty samples of dog's blood and organs were received from Veterinary school of Sydney University for the analysis of dichlorvos. Dichlorvos is a powerful insecticide and it is being used on dog collars, pest strips and on wheat grains in storage. The use of dichlorvos, toxic to mammals and humans, has led to concern about the dangers which might result from its unsupervized use. The pharmacological effects and toxicology of dichlorvos have been the subject of extensive research. There is no reliable method for analysis in tissues and blood. A suitable method is being developed at this division.

DRUG SECTION

Two hundred and forty-seven cases were examined during 1971, submitted by the following authorities:

Police Department	171
Government Stores Department	31
Poisons Branch	20
Doctors and hospitals	14
Other sources (including other Government departments)	11

Following the trend of the last few years, the number of police cases increased. Most of the police cases involved the detection of substances restricted under the Poisons Act of N.S.W., notably cannabis, lysergide (L.S.D.), heroin and other opiates, amphetamines and barbiturates.

The different types of sample found to contain lysergide (L.S.D.) included paper with greybrown, green, orange or blue circular stains of L.S.D., gelatine flakes known as "clear lights" (some as small as a few mm square), orange tablets of various sizes and shapes (some known as "orange sunshine"), strawberry pink tablets, cream ascorbic acid tablets and yellow "Rose Hip" tablets and capsules filled with white powder.

On the 15th January new legislation was gazetted to enable a charge of "selling drugs" (an indictable offence) to be brought against persons found with more than the prescribed quantity of a drug in their possession. Thirty-one such cases were received, all of which involved considerable additional work in determining the quantities of various drugs present after separation and identification.

In the majority of police cases, a multiple number of exhibits were submitted, the most outstanding example being a single case involving forty-seven different types of drugs. Eleven cases related to charges of procuring illegal abortion, and two of these arose from the death of the pregnant woman. Two cases of assault and attempted rape were received, one where the offender used a bottle of "Mucaine" medicine to strike his victim on the head, and also attempted to sedate her with "Pentalgin" tablets, and one where a chloroform pad was used. Several cases involved alleged poisoning, including one where a husband claimed his wife was poisoning him with an asthma remedy from Italy, which proved to contain amidopyrine (a drug now prohibited in N.S.W. because of its severe side-effects), and one where pentobarbitone tablets were administered by a nursing sister to her matron in a cup of tea.

The Poisons Branch samples included a multi-injection phial of "Euthanasia Solution" for killing animals, where the content of pentobarbitone was found to be only 67 per cent of the stated content.

The Pharmacy Board submitted one sample, a complaint that a mixture which had been made up at intervals over a period of 20 years from the same prescription had, on the last occasion, induced severe illness when taken. The mixture proved to have a mercuric chloride content 1,000 times that prescribed.

Only two of the samples submitted by Government Stores Department failed to meet the standard, these being a batch of chloroform and a sample of gum tragacanth.

TOXICOLOGY SECTION

Nine hundred and twenty-one cases were submitted for toxicological examination during the year. Cases were received from the following sources:

	1971	1970
City coroner	581	490
Parramatta coroner	106	91
Country coroners	188	139
Canberra coroner	16	12
Dog baits, etc.	21	15
Miscellaneous sources	9	..
Total	921	747

This is the last year for which separate figures will be reported for the city coroner and the Parramatta coroner as the two Coronial Districts were amalgamated during the year to become the Metropolitan Coronial District. Separate figures were maintained for the balance of 1971 on the old basis to facilitate comparison with previous years.

Forty-seven per cent of the cases were found to contain drugs. The proportion of such cases has fallen in the last 5 years from 74 per cent to 52 per cent last year. This trend can be explained by the present policy of submitting cases for chemical examination even though a mechanical cause such as hanging, stabbing, drowning, etc., appears to be the primary cause of death.

Barbiturates continued to be the class of drugs most frequently found, comprising 55 per cent of all "positive" cases. This compares with 66 per cent two years ago. As the proportion of barbiturate cases diminish, the number of cases involving non-barbiturate sedatives, antidepressives and to a lesser extent, tranquillizers, continues to increase. There are also more carbon monoxide cases each year. Increasingly, these involve the deliberate inhalation of motor vehicle exhaust fumes rather than town gas.

A case of thallium poisoning was uncovered as a result of police investigation of a case of suspected attempted murder. The background story suggested strongly that the suspect's wife who had died about a year earlier, had died of thallium poisoning. The body was exhumed and subsequent analysis showed that a large quantity of thallium had been ingested prior to death. The husband Robert Henry Floyd was charged with murder and subsequently convicted. It is interesting to note that the first suspicions in relation to this case arose from the analytical results reported by the Biochemical Section of this laboratory on the urine of the sister-in-law of the person who was eventually convicted of murder. (*See* "Biochemical Section Report".)

The Annual Conference of State Forensic Toxicologists was held this year in Adelaide during November. Forensic Toxicologists from all the Australian States were present and a valuable interchange of methods took place. Arising from a discussion on the influence of drugs on driving ability the following resolution was adopted:

> "In view of the fact that many drugs cannot be detected in small samples of blood, this conference recommends the adoption of the system at present operating in Tasmania, namely that where a driver is suspected of being under the influence of a drug that compulsory samples of blood and urine be taken".

It was agreed that at the present time, it is not possible to set quantitative limits for most drugs, above which a driver may be considered under the influence of a drug. However, once a drug has been found in the blood or urine of a driver, the evidence of driving impairment provided by the arresting officer would be the most important factor involved.

Details of the results of analysis are tabulated in appendix 2. In many of these cases, more than one drug was found and the quantities recovered varied from therapeutic amounts to quantities indicative of the ingestion of an obvious overdose. The presence of a drug in the viscera does not necessarily indicate that it was the cause of death. The results of analysis are interpreted when required by a senior toxicologist and by the medical officer involved in the case and this information, together with other relevant information, is considered by the coroner who makes a finding as to the cause of death.

BIOCHEMISTRY SECTION

Two thousand one hundred and thirty-nine samples were analysed during the year. These included a wide range of requests for the determination of trace quantities of drugs, and metals. Many of the analyses performed are carried out individually since a result is required urgently. As it is more efficient to carry out analyses on a batch basis, this adds to the work of the section. The analyses can be subdivided as follows:

Metals in biological specimens	1,683
Drugs in biological specimens	558
Blood chlorides	67
Other analyses	45

Exhibits were received as the result of city and country coronial enquiries (74), from the police (26), the Division of Occupational Health and Pollution Control (504) and from other sources, including hospitals (1,535).

Trace Metals

Instrumental methods including atomic absorption spectrophotometry were used to determine the concentration of most metals. Most of the analyses were carried out on biological fluids. Analytical requests were received for the following:

Aluminium	2	Iron	27	Nickel	1
Antimony	12	Lead	998	Selenium	4
Arsenic	225	Lithium	103	Silicon	4
Beryllium	1	Magnesium	2	Silver	7
Cadmium	3	Manganese	27	Thallium	48
Chromium	11	Mercury	143	Tin	2
Cobalt	4	Molybdenum	1	Zinc	27
Copper	31				

Cases of lead poisoning in children were again traced to painted surfaces, fragments of which yielded lead contents from 3·4 per cent to 67 per cent.

A further collaborative survey on trace lead determination was carried out by this section in co-operation with three other laboratories in private industry mostly using blood and urine specimens taken from pooled samples. In addition, standard lead solutions were distributed to the laboratories concerned. The results of the survey confirmed the accuracy of the method used by this section.

A considerable increase occurred in the number of specimens of serum submitted for lithium determination. This reflects the value of the rapid routine analytical service provided by this laboratory.

The cold vapour atomic absorption technique for the estimation of trace quantities of mercury was adopted. This replaced the colourmetric method which was formerly used. The new method has markedly improved sensitivity, facilitating smaller samples to be analysed with greater speed.

Early in the year, a significant concentration of thallium was detected in the urine specimen of a hospital patient. It had been sent to the laboratory for heavy metal screening. The result enabled a positive diagnosis of thallium poisoning to be made. An investigation into the source of the poison led to the exhumation of the body of the patient's sister-in-law who had died approximately a year previously. The husband of the deceased woman, Robert Henry Floyd was subsequently convicted of murder.

Drugs in Biological Specimens

Five hundred and fifty-eight requests were received for the detection and estimation of drugs. These specimens were submitted in an endeavour to confirm a diagnosis of drug overdosage or abuse. Requests for specific groups of drugs included the following:

Barbiturates	175
Narcotics	204
Amphetamines	21
General drug analysis	105

Requests were also received for the determination of twenty-five specific drugs or poisons and fifteen specimens were received in which the presence or otherwise of a drug or poison was to be established.

In the case of a conscious patient, urine has proved to be the most useful specimen to screen for drugs. To enable the analysis to be carried out satisfactorily, the specimens should be the total volume of specimen collected as soon as possible after the suspected ingestion of a drug.

A study is being carried out in conjunction with Wistaria House drug referral centre to determine the urinary concentration of selected drugs at specific intervals after administration. Some data have been obtained for the drugs morphine, pethidine, and methadone. Our investigations indicate that urine specimens should be collected within 48 hours of ingestion of these drugs to enable them to be identified. Further studies are to be made in this field of work.

Some interesting cases of suspected poisoning were received for analysis. One case related to a person who suspected that a poison had been placed in his coffee jar. He had become violently ill each time after drinking coffee. Analysis of the coffee remaining in a percolator from which the most recent drink had been taken, revealed a significant concentration of arsenic. He was admitted to a hospital which forwarded specimens of his urine for arsenic determination. These also showed elevated levels of arsenic.

In another case, a person purchased some soft drinks for consumption at his place of employment. He distributed bottles amongst his workmates, retaining one for himself. After drinking a portion of the contents he became quite nauseated and was conveyed to hospital for treatment. The suspected drink was found to contain approximately 3 per cent sodium hydroxide.

A third case related to a complaint made by a woman who stated that she believed a fellow employee of a factory had contaminated her lunch with poisoned wheat. The food mixture was found to contain traces of warfarin which is a common ingredient in rat poisons.

Blood Chlorides

Blood specimens were submitted from sixty-seven subjects whose death was apparently caused by drowning. In forty-two of these exhibits, the difference in chloride level between the two chambers of the heart was significantly greater than the normal difference and indicated that death was due to drowning.

The results obtained in cases where a body was recovered after being in the water for an extended period showed that the chloride concentrations in the left and right chambers tended to equilibrate, being elevated in the case of a salt water drowning and depressed for fresh water drownings. It was also observed that when resuscitation was carried out on an apparently drowned person, the concentrations of chloride in both heart chambers were similar. The value of this analysis as an indication of the cause of death is therefore largely negated in both of these circumstances.

BLOOD ALCOHOL SECTION

Two thousand and thirty-five specimens were analysed during the year. The analyst in charge of the section attended court on the average of once a fortnight during the year. From the beginning of the year the gas chromatographic method of alcohol analysis was in full operation. It was used in conjunction with the Kozelka and Hine chemical method of analysis, thus duplicating alcohol results by two different methods. This meant that there was a check on the quantity of alcohol found and the certainty that the substance measured was ethanol. During the year the alcohol dehydrogenase method (A.D.H.) for determining alcohol was investigated and found to be most reliable. This method has been used for a number of years overseas, particularly in European countries and has attained worldwide recognition. It is intended to introduce this method into operation in the following year, using it instead of the Kozelka and Hine method in most cases, since it is a simpler and more rapid method.

The alcohol analyses for the year can be summarized as follows, the alcohol concentrations being expressed as milligrammes per 100 millilitres.

(1) *Blood:*

Alcohol concentration (mg/100 ml)	Coroners cases	Police authorities			Medical practitioner	Hospitals	Miscell-aneous
		DUI	PCA	Murder etc.			
None	952	Nil	Nil	..	4	17	..
15–50 ..	136	1	Nil	..	1	Nil	..
51–79 ..	74	Nil	1	..	Nil	2	..
80–150 ..	204	6	52	..	11	16	..
151–300 ..	315	18	56	..	29	29	..
Over 300 ..	70	2	1	..	2	5	..
Total ..	1,751	27	110	..	47	69	2

Total 2,006

Other Biological Materials for Alcohol: Twenty-three specimens.

The category of D.U.I. refers to cases where persons have been charged with "driving under the influence of alcohol", usually following upon their involvement in a motor accident.

The category of P.C.A. refers to cases where, as a result of a "Breathalyzer" test, a person has been charged with having more than the prescribed concentration of 0·08 per cent alcohol in his blood. A person so charged has the legal right to have a blood specimen taken for analysis by a medical practitioner. The specimen is divided into two portions, one being handed to the offender and the other half being given to the police officer who sends it to this laboratory. To date no "P.C.A." blood alcohol analyses have differed significantly from the corresponding "Breathalyzer" result, when factors such as the average loss of alcohol per hour from the blood are taken into consideration. In most cases the blood sample was taken between 1 and 2 hours after the breath analysis was carried out.

It was found that there were few registered public analysts who were willing or satisfactorily equipped to carry out analyses on the independent blood sample taken by the medical practitioner. Some of these were in the habit of sending the defendant's portion to these laboratories for analysis. We were therefore in the position of analysing both the police's and the defendant's portion of the same specimen. Since this was contrary to the concept of an "independent analysis", the division made enquiries and was able to compile a list of analysts who were willing to undertake this work. This list was brought to the attention of the medical profession in the newsletter issued by the Division of Health Education, and by other means.

The department issued a request to Government medical officers in the State of New South Wales to arrange as from 1st April, 1970, for blood alcohol levels to be carried out in all cases where a driver, motor bicycle rider or pedestrian seventeen (17) years of age and over is killed in a road accident in New South Wales. The greater number of specimens analysed this year under the category of "Coroners' Cases" (1,751) as compared to last year (1,454), partly resulted from the implementation of this new policy.

This section also analyses blood for carbon monoxide, mostly related to cases where a determination for carbon monoxide was requested in addition to a blood alcohol analysis. Of the 113 specimens analysed, 28 were negative, 6 showed less than a 50 per cent saturation and 79 showed more than a 50 per cent saturation of carbon monoxide, indicating that this was implicated as the cause of death.

A police breathalyzer training course was not held this year. To date there had been one such course per year since the Breathalyzer Section began and the analyst in charge had been involved in this training of police officers.

Sixty-nine certified batches of standard alcohol solution were prepared during the year for use by police officers of the Breathalyzer Squad.

This laboratory received a blood sample from a person who was charged "D.U.I." The blood alcohol concentration was found to be only 0·03 per cent. An average person would not show many outward symptoms at this level nor would his driving ability be markedly affected. After some enquiries, it was found that this person had refused to submit to a test on the "Breathalyzer". Later, the police withdrew the "D.U.I." charge because of the low level. However, this person still faced a large fine (maximum $400 penalty) for refusing to blow into the "Breathalyzer".

A coronial blood sample was received where the alcohol level was found to be 0·70 per cent. Since it is not possible for a person to attain such a high level, alcohol must have been mixed with the blood specimen at some stage. Enquiries revealed that the Government medical officer performing the post mortem had great difficulty in finding a sufficient sample of blood. The person was completely mangled after being hit by a lorry. It was strongly suspected that the stomach contents which may have contained a large quantity of alcohol, may have become mixed with this blood.

There are other types of alcohols, which are very much more toxic than ethyl alcohol (the "alcohol" found in alcoholic beverages). Methyl alcohol (wood alcohol) was detected in one coronial blood specimen and this person had obviously died from its effects. The methyl alcohol was found in a fruit syrup bottle in the pure state. It is possible that the person mistook this for the less toxic ethyl alcohol.

A blood sample for analysis was found to contain 0·475 per cent alcohol. This had been taken from the body of a person who had been driving a motor car. He had been killed by an explosion within the car which was caused by the accidental detonation of gelignite. It was known that he had stored the gelignite in his car for some time. This alcohol level would represent a lethal dose for a normal person, and this is one of the highest levels of alcohol recorded in the blood of a person who was still conscious and able to drive a vehicle before death intervened by other means.

CRIMINAL INVESTIGATION SECTION

One hundred and twenty-five cases involving 402 exhibits were examined during the year. Most of the cases (118) were submitted by the N.S.W. Police Department but a small number of cases (one or two from each source) were submitted by:

N.S.W. Public Solicitor's Office.

N.S.W. Department of Labour and Industry.

Division of Occupational Health and Pollution Control.

Commonwealth Banking Corporation.

Commonwealth Department of the Army.

The analyst in charge of the section, Mr J. C. Cantwell, received subpoenas to attend court on eight occasions and travelled to South Vietnam to give evidence at a court martial for the Commonwealth Department of the Army. The assistant analyst received subpoenas to attend court on eleven occasions. Evidence was given in courts in both the metropolitan area and country areas of the State.

Type of exhibit	No. of exhibits
Paint	138
Glass	11
Fibres and fabrics	28
Metals	18
Flammable liquids	87
Corrosive substances	1
Explosive residues	15
Light filaments	8
Aqualung cylinders	3
Miscellaneous materials	93

The general categories of cases for which these exhibits were submitted are tabulated below, together with a specific description of many of the cases involved.

Category	Number of cases	Specified cases
Deaths	22	Murder, stabbing, shooting, death in bomb explosion, death as a result of a motor accident, death of a pedestrian, shooting by police, death while diving with aqualung.
Crimes of violence	9	Malicious wounding, armed and attempted armed hold-ups, armed robbery, alleged assualt, corrosive liquid throwing, suspected poisoning, attempted suicide.
Sex offences	4	Attempted rape, abduction, carnal knowledge of girl under 10, indecent assault and assault with intent to rape.
Fires and explosions	28	Suspected and alleged arson cases, suspicious fire, destruction by fire, explosion and fire in shop, damage by fire, fires in residence and unoccupied house, serious ly burned person, alleged explosion, burnt out vehicle, malicious damage by fire.
Larceny	25	Break, enter and steal, attempted break and enter, theft, alleged theft, break and enter with intent to steal, stolen car found stripped, receiving.
Motor vehicles	19	Accident, fail to stop after an accident, hit and run accident, vehicle in collision, smashing car windows, fatal hit and run accident, fatal car accident, culpable driving and driving under the influence of liquor.
Miscellaneous	15	Malicious injury, tooth from deceased unidentified male, bomb threat hoax, identification of dye on $10 note, possession of article capable of causing bodily harm, illegal possession of an irritant substance, possession of article capable of discharging an irritant substance, flammability of a fabric.

Three groups of police officers undergoing the detectives training course at the Police Academy visited these laboratories in connection with their training. They inspected those sections of the laboratories which are involved in forensic activities and attended a lecture by the analyst in charge of this section on the work carried out by these laboratories which is related to their work and on the significance of our analytical findings.

The analyst-in-charge of the section gave an illustrated lecture to our analytical staff on the theory and application of the spectrograph with particular reference to the Littrow model possessed by these laboratories.

A detailed set of notes of the spectrograph has also been compiled and included as a supplement to the Divisions *Methods Book*.

The assistant analyst, Mr G. Cook, undertook a week's course of instruction on X-ray fluorescence spectrometry conducted by Philips Industries. X-ray fluorescence spectrometry has been used for the examination of a number of exhibits submitted to this section.

Mr Cook also gave an illustrated lecture on the theory and application of X-ray fluorescence spectrometry with particular reference to the Philips VW1420 model spectrometer which is shared by this division with the Division of Occupational Health and Pollution Control.

A method for the determination of bromine in blood using the X-ray fluorescence spectrometer was developed by Mr Cook and is sufficiently satisfactory for routine application in the Toxicology laboratory.

A technique for comparing and preserving the layer sequence of paint flakes has been developed. The paint flakes are embedded in a polyurethane disc approximately 2 centimetres in diameter and 0·5 centimetres thick. It is then polished and examined microscopically. The polishing machine that is used is one that was designed by this section and made in the laboratory's workshop.

A technique involving the use of a hot stage microscope to compare the refractive indices of minute fragments of glass was subjected to a preliminary evaluation. The method is based on the *Becke Line Principle*. It makes use of the variation in refractive index of a liquid which occurs with variation in temperature. It is far less cumbersome and more reliable than the technique based on the *Becke Line Principle* which employs mixtures of two liquids to obtain liquids of varying refractive index. The hot stage attachment available at present within the division showed some promise with this technique but it is considered that a more sensitive apparatus of this type which is available at a cost of approximately $1,500 would be necessary if this technique is to replace the conventional *Becke Bright Line* method at present in use.

The technique involving pyrolysis in association with gas chromatography has been used on some exhibits of paint and polymers. The Qantas bomb threat hoax case prompted the application of this technique on exhibits which were examined in connection with this case. The techniques available at that time in these laboratories were rather crude involving pyrolysis in test tubes, the pyrolyzate being dissolved in suitable solvents and injected into a gas chromatograph. The new Curie Point pyrolysis unit which was obtained by the division late in the year will permit a much closer control over the conditions of pyrolysis and should yield reliable and useful results in future cases.

MISCELLANEOUS PRODUCTS SECTION

This small section was previously known as the Government Stores Section. The division has always received for examination a relatively small number of samples which defy placing in any of the established sections. These samples are largely household or commercial products such as flysprays, disinfectants and detergents. They come mainly, but not exclusively, from the Government Stores Department, which submits tender samples to be checked for compliance with a specification.

There was a falling-off in this work during 1971, but with the letting of many new biennial contracts early in 1972 it is expected that the numbers will increase again. A difficulty was experienced due to the sporadic way in which these samples arrived—the analyst being overworked at times, whilst at others there would be little routine analyses to carry out.

This was alleviated in October, 1971, by transferring the analyst for administrative purposes to the General Food Section. This is one of the largest sections, permitting the work to be shared between two or more analysts when necessary. Conversely the analyst who previously worked only on Government Stores samples now helps with food analysis as the opportunity permits.

The name of the section was changed to indicate that these samples are not only submitted by the Government Stores Department but also by other State departments which do not have their own analytical laboratories and by agencies of the armed forces.

WATER SECTION

Fourteen thousand and fourteen samples were examined during the year, again showing a significant increase over previous years, and highlighting a continuous interest in water pollution problems and the purity of drinking water supplies. Three thousand one hundred and ninety-one samples were examined for chemical constituents. These were mainly drinking water, sewage and trade effluent samples. Two hundred and six miscellaneous samples were also examined being mainly algal material and deposits from mains.

Water Pollution

The section's facilities were heavily taxed by the submission of samples of trade waste and suspected polluted water during the early part of the year. The newly opened laboratories of the Water Pollution Control Branch of this Department were able to relieve some of this workload when they took over the chemical analysis of water pollution samples towards the end of the year. In

future, they will carry out the chemical analyses of all trade wastes and of any samples related to the question of water pollution, whilst our laboratories will continue to monitor the purity of country drinking water supplies, the efficiency of sewage treatment plants, the safety of public swimming pools, etc. However, our Division will continue to carry out the microbiological examination of samples related to water pollution.

The section carried out a number of analyses for local authorities and one, Parramatta City Council, decided to prosecute alleged offenders under the Local Government Act on some samples contrary to our advice. These cases are still proceeding and have involved many members of this Division in much unproductive time spent awaiting hearings at court. One disturbing aspect of this work was the impounding of the section's records and methods books for long periods.

Water Quality Survey

A survey of the chemical characteristics of N.S.W. country water supplies is continuing. During the year 20 samples were examined for 25 different constituents in each case. These samples are being taken on a systematic basis at our request. This continues the scheme introduced late in 1970 under which it is intended that the reticulated water of each town in N.S.W. with a population exceeding 1,000 shall be analysed regularly, if possible at periods not greater than 2 years, but in the case of larger supplies, at much shorter intervals. Each sample was tested for lead, copper, zinc, manganese, arsenic, mercury, detergent, phosphate, sulphate and silicate, in addition to the normal routine tests carried out in the main water laboratory.

Special Examinations

In addition to the routine examination of water, sewage, trade effluent and swimming pools a number of special examinations were carried out.

Three samples of roof paint were examined for lead content but no significant levels were found which would be likely to affect water collected from roofs painted with these paints.

Two samples of deposits found in a chlorinator at a power station were submitted to determine whether they would have any harmful effects on carrying out maintenance work. One sample was found to consist of the chlorides of nickel and chromium. The other deposit consisted of 60 per cent hexachlorobenzene together with other chlorinated hydrocarbons which are present as impurities in liquid chlorine. It was considered that no special hazard existed in the removal of these materials which are present only in small amounts in the chlorinator.

Detergents

Three hundred and fifty-nine samples were examined for detergent concentration. With the change over to the use of biodegradable detergents in place of the non-biodegradable detergents previously used, records are being maintained of the detergent concentrations present in all stages of sewage treatment works, including the ponded effluent. Although insufficient samples have yet been examined to show any marked trend, the impression is that the level of residual detergent present in sewage works' effluents is decreasing. This should result in an improvement in river water quality.

Bacteriological Laboratory

The work of the bacteriological laboratory has increased considerable during the past year. The number of samples examined was 10,617 as compared with 7,458 during 1970.

This increase has been due to the large number of surveys being carried out by local and health authorities, particularly in the Sydney, Lake Macquarie and Lake Illawarra areas.

Routine examinations for the presence and identification of algae were carried out for a number of authorities which submit regular series of samples in connection with the control of algae in water storage reservoirs.

A comparison of the efficiency of two different brands of membranes used in the membrane filtration method for the enumeration of *E. Coli* and coliform organisms was carried out. This was done because of the significant difference in cost between the various brands, the cost of these filters representing a major item in the cost of running these laboratories. These tests showed that one had a slightly higher retentive power than the other, and consequently this was adopted as the standard membrane for use.

Improvements in technique included the increased use of presterilized disposable equipment where possible to improve efficiency and so allow a larger volume of samples to be examined.

The streptococcus count as a further indication of faecal contamination is being used as an aid to the interpretation of doubtful cases of pollution.

The use of faecal coliform broth as an alternative method for the detection of *E. Coli* was investigated but found to have no advantage over the current methods.

Advisory Service

A large proportion of time was spent in investigating problems concerning country water supplies. Specialized technical advice was also given by telephone to other government departments, health inspectors and members of the public on various problems related to drinking water supplies, the operation of water treatment plants, swimming pools and other uses of water. The large number of enquiries handled confirms that this service meets a definite need.

During the year the Public Works Department and a number of industrial firms setting up laboratories to carry out water pollution analyses, sent representatives to the laboratory for instruction or information on carrying out this work.

Field Investigation

The officer-in-charge of the section, Mr D. M. Robbins, carried out field investigations in connection with various water problems at Quirindi, Taree, Tamworth, Gosford, Braidwood, Canberra and Nowra.

FLUORIDATION OF PUBLIC WATER SUPPLIES SECTION

Fluoridation of the water supplies servicing the areas of Newcastle, Taree, Forster, Wagga Wagga, West Tamworth and Junee was commenced during the year, bringing the number of fluoride installations under the supervision of the section to sixty-five. At the end of the year fluoridated water was being supplied to 3·627 million persons, representing 79·4 per cent of the State's population. The Junee plant was designed to operate using a quality (or closed-loop) control system and its installation was the first of its type in this State. The plant performance is being closely studied by the Section in conjunction with officers from the Department of Public Works and a joint report on its feasibility is to be presented to the Fluoridation Advisory Committee.

Three schools for the training of operators and others associated with the running of fluoridation plants were conducted by the section. Fifty-one candidates successfully completed the courses making a total of three hundred and fifty-five persons now trained.

Thirteen centres were visited by the Section during the year in connection with the investigation, commissioning and supervision of fluoridation plants and forty-nine centres were visited by departmental regional staff on behalf of the Section in relation to the supervision of fluoridation plants.

Five hundred and nine samples of water were analysed for their fluoride content.

A start was made during 1971 to survey the fluoride content of potable waters throughout the State. So far, three communities have been found in which the naturally occurring fluoride content is optimal for dental benefit. These communities, totalling 2,900 persons, are Warren and Carinda in the northwest, and Holbrook in the Riverina.

A paper entitled, "Cost Estimation of Water Fluoridation by Local Government Authorities" was written by Mr S. Altree-Williams and published in the *Shire and Municipal Record*, **64**, 401-405, (August, 1971).

The officer-in-charge of the section, Mr Altree-Williams submitted a proposal that fluoride tablets be distributed free to children in areas where the installation of water fluoridation was not an economical proposition. This proposal was approved by the Department in principle, but its implementation is dependent upon the necessary funds being made available.

RESEARCH SECTION

This represented the first full year of operation for this new section, the analyst appointed to take charge of the section, Dr A. W. Archer, first assuming duties on 21st October, 1970. Towards the end of 1971 a technical officer was allocated to assist with this work and the policy has been adopted of Dr Archer liaising with the various sections in respect to their research needs, in some cases supervising an analyst from another section who is temporarily seconded to his section to carry out work relating to a specific problem.

This small section is mainly concerned with investigating new or difficult analytical methods. It supplements the work of the various sections in the Division who all carry out a proportion of developmental work, the time available for which fluctuates according to the demands for routine analytical work. This section is therefore able to devote more uninterrupted time to individual projects and the expectations seen for this section have been amply fulfilled.

Since this section was initiated after the move to our new laboratories it has been necessary to obtain certain new equipment for it which is of a standard higher than is required for our routine work. The equipment obtained during the year included a Hewlett Packard Research gas chromatograph, model 7620A.

Among the research projects investigated was the estimation of bromide in post mortem blood. This is important in toxicological analysis as evidence of the possible ingestion of bromoureides, which are usually completely metabolised in the body. The normal method of estimation using gold chloride, although satisfactory with sera, often fails with post mortem blood samples and alternative methods were therefore examined. The bromide ion electrode was critically evaluated as the basis of a possible method but was found to be insufficiently sensitive for toxicological analysis. A colorimetric method for the estimation of total bromine was developed, based on the procedure of Kretzschmann and Engst.[1] Although sensitive, this method requires the blood sample to be ashed in the presence of alkali and this is therefore a lengthy process where many samples are to be examined.

A novel method for the estimation of bromide in blood using gas chromatography was developed. The bromide is converted to a volatile derivative (1,2-dibromocyclohexane) which is determined quantitatively after gas chromatography by means of an internal standard. A paper describing this method has been accepted for publication in the *Analyst*.

In the course of the year the X-ray fluorescence spectrometer was put into operation. This instrument, after calibration with standard bromide solutions, is capable of measuring the total bromine in blood directly, with no sample preparation.

A sample of gelato was suspected to contain sorbitol, a prohibited sugar alcohol additive in this type of product, and methods for the detection and estimation of this compound in gelato and ice cream were examined. Sorbitol was determined volumetrically[2] by oxidation with potassium periodate. A recovery of 98·2 per cent of added sorbitol was obtained. The sorbitol was also determined after conversion to a volatile acetyl derivative, by gas chromatography,[3] using xylitol as an internal standard; a recovery of 100·9 per cent was obtained. The gelato sample was found to contain 4·1 per cent sorbitol by the volumetric procedure and 4·3 per cent by gas chromatography. A sample of apple juice, which normally contains 1·8–8·2 g sorbitol/litre, depending on the type of apple, was found to contain 3·2 g sorbitol/litre when examined by the gas chromatographic method.

An enzymatic method[4] for the determination of blood alcohol using alcohol dehydrogenase was examined. This method has been used for a number of years overseas, particularly in Scandinavia and Germany, and is generally accepted as a reliable and specific technique for the estimation of ethanol in blood. Other State laboratories in Australia who had attempted to use the method were disappointed with the results obtained. Ten samples of blood were analysed by three different methods, the Kozelka and Hine oxidation method, the gas chromatographic method and the alcohol dehydrogenase method. There was no significant difference between any pair of results from each sample. The correlation coefficient between the results obtained by oxidation and gas chromatography was 0·993 and that between the results obtained by oxidation and the alcohol dehydrogenase method was 0·995. The method is sufficiently sensitive for the presence of ethanol vapour in the laboratory to vitiate the results. This method was subjected to further collaborative testing by the Blood Alcohol Section which intends to introduce it into operation in 1972.

Ice cream is required to contain no fat other than butter fat. Vegetable fats contain the sterol β-sitosterol in place of the cholesterol found in butter fat and thus the presence of added vegetable fat is indicated by the presence of β-sitosterol. The β-sitosterol content of a number of fat samples was estimated by gas chromatography of the unsaponifiable matter from the fat under examination, using cholestane as an internal standard. This method has been used by the Milk Section for the routine examination of suspect ice cream samples. Classical methods which rely on the melting-point of the isolated acetylated sterol are only capable of detecting gross adulteration. The method has also been modified to permit the estimation of cholesterol in vegetable fats, thus detecting added animal fat.

A rapid method[5] for the estimation of fat in sausage meat was examined at the request of the Meat Section and found to be suitable for routine use.

Attempts to determine lysergic acid di-ethylamide (LSD) directly by gas chromatography[6] were unsuccessful.

References

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2 H. K. Hundley and D. D. Hughes: *J.A.O.A.C.*, 1966, 49, 1180.
3 H. G. Jones, *et al*: *Ibid.*, 1966, 49, 1183.
4 T. Bucher and H. Redetzki: *Klin. Wochenschrift*, 1951, 29, 615.
5 E. G. Bligh and W. J. Dyer: *Canad. J. Biochem. & Physiology*, 1959, 37, 911.
6 M. A. Katz, *et al*: *J. Chrom.*, 1967, 31, 545.

Appendix I—Origin of Samples Received

Source of authority	1971	1970
Pure Food Act (various authorities) (milk, meat, miscellaneous foods, bacteriological samples)	15,500	13,289
Government Stores Department (foods, meats, drugs, miscellaneous contract samples)	624	723
Coroners' Enquiries (toxicological cases, post mortem, blood alcohols)	2,754 cases	1,649 cases
Police Authorities (drugs, criminal investigation, driving under influence, etc.)	384 cases	409 cases
Division of Occupational Health and Pollution Control (metals, dusts, pesticides, etc.)	1,134	537
Local Government Authorities and Government Departments (waters, sewage and trade wastes)	14,539	11,940
Miscellaneous Authorities (food and miscellaneous materials)	1,943	1,461

Appendix II—Results of Visceral Examinations

Nature of Drug or Poison	*Number of Cases in which found*
No poinsons found	485
Amitriptyline	16
A.P.C. mixture	6
Arsenic	3
Barbiturates—	
Amylobarbitone	53
Amylobarbitone plus Quinalbarbitone	8
Barbitone	1
Butabarbitone	3
Butobarbitone	12
Cyclobarbitone	1
Pentobarbitone	122
Pentobarbitone plus Carbromal	27
Phenobarbitone	1
Quinalbarbitone	11
Brominated Ureides	54
Caffeine	8
Carbon Monoxide	56
Chloral Hydrate	19
Chlordane	2
Chlorides (Blood)	25
Chloroquine	5
Chlorpromazine	3
Cocaine	1
Cyanide	1
D.D.T.	1
Debrisoquine	1
Dextropropoxyphene	1
Diazepam	13
Dibenzepin	4
Ethinamate	1
Ethchlorvynol	1
Ethyl Alcohol—	
None found	501
Less than 0·050 per cent	63
0·051 per cent to 0·150 per cent	117
0·151 per cent to 0·300 per cent	92
More than 0·300 per cent	27
Gentian Violet	1
Glutethimide	8
Imipramine	5
Methadone	1
Methanol	1
Methdilazine	1
Methaqualone	27
Methylene Blue	1
Morphine	1
Nicotine	2
Nortriptyline	7
Organic Phosphates	6
Paracetamol	4
Paraldehyde	4
Pethedine	1
Phenacetin	3
Phenolphthalein	1
Phenytoin	1
Prochlorperazine	1
Protriptyline	1
Quinidine	1
Quinine	4
Salicyalamide	1
Salicylic Acid	13
Strychnine	5
Thallium	1
Theophylline	1
Thioridazine	3
Trifluorperazine	2

DIVISION OF FORENSIC MEDICINE

Director: Dr Edward Brian La'Brooy, M.B., B.S., D.C.P., F.R.C.P.A., M.R.C.Path.

Location: Division of Forensic Medicine, 42–50 Parramatta Road, Glebe 2037

(The division moved into its new premises on 24th August. It shares the building with the coroners' courts)

STAFF

Professional

3 Specialist Medical Officers
2 Medical Officers
1 Registrar
1 Senior Forensic Biologist
1 Forensic Biologist

Laboratory

1 Senior Medical Technologist
3 Technical Officers
2 Technical Assistants
4 Laboratory Attendants

Morgue Assistants

1 Senior Morgue Assistant
12 Morgue Assistants

Office

3 Office Assistants
3 Typists
1 Building Services Officer

SPECIAL FEATURES

On 15th October, 1971, Dr E. B. La'Brooy was appointed Director *vice* Dr J. Laing who retired on medical grounds.

The special feature of the year's activities was the implementation of the long awaited transfer to the modern well-equipped new premises at Glebe. The building was formally declared open by the Honourable Sir Leslie Herron, K.B.E., C.M.G., Chief Justice of New South Wales, on 20th August, before a company of distinguished officials and guests.

FUNCTIONS

The division undertakes professional activities in two main spheres *viz.* forensic pathology and forensic biology.

Forensic Pathology

In this area the Divisional Medical Officers perform autopsies on all bodies coming under the jurisdiction of the city coroner. They work in close co-operation with the Police Force of N.S.W. and specialist forensic pathologists are available to visit scenes of crime when requested. The division gives undergraduate lectures in forensic medicine to the medical students of two metropolitan universities and also undertakes postgraduate training and demonstrations to interested Medical Practitioners.

Lectures are also given to the N.S.W. Police Training Academy and the Royal Australian Army Provost School. The division also performs autopsies on all aircraft accident fatalities occurring within a 100 mile radius of Sydney, on behalf of the Department of Civil Aviation. It gives advice and assistance to country coroners, medical officers, and members of the police force throughout the State. The Director now undertakes the histopathology reports from all country coronial cases, a duty which was formerly shared by all the Specialist Officers.

Forensic Biology

This section provides biological services in the investigation of crime by the examination of material submitted by the N.S.W. Police Force throughout the State, and by the Police Forces of the A.C.T., Territories of Papua and New Guinea, and from the Australian Armed Forces.

The professional officers give lecture demonstrations to the N.S.W. Police Training Academy and the Commonwealth Police Academy.

Laboratory and Ancillary Services

The laboratory facilities are divided into three main areas:

1. City Morgue:

	1970	1971
Cases admitted	2,878	2,760
Cases post-mortemed	2,499	2,253

This section which functions 24 hours a day is responsible for the admission and discharge of all cases reported to the city coroner. In addition to assisting medical officers in the performance of autopsies, the morgue assistants through the senior morgue assistant are responsible for collecting specimens for special investigation involving radioactivity and levels of pesticides in the general population.

2. Histopathology:

	1970	1971
Post-mortem tissues—		
(divisional)	1,143	1,118
(country cases)	130	119

This section provides a full histopathology service for all autopsies performed within the division as well as those cases sent in by country Government Medical Officers.

3. Forensic Biology:

	1970	1971
Specimens submitted	1,522	2,009

This laboratory is concerned with the detection, identification, and grouping of blood stains, seminal and saliva stains, hairs and fibres, from material submitted by the N.S.W. Police Force and other law-enforcement authorities. (*See* above.)

Radiography/photography

Subjects for radiography (1-1-71 to 31-12-71)	40
Subjects for photography (colour)	110
Subjects for photography (monochrome)	50

The availability of a staff radiographer with the necessary facilities for developing our own films has provided a welcome addition to the special investigations performed by forensic pathologists. Photography is used widely as a means of recording interesting material for teaching and publication.

The new premises has provision for a museum but development of this activity must await additional professional and technical staff.

Office

The clerical section is responsible for typing, filing and recording all professional reports and dispatching these to various authorities.

In addition to providing the clerical services necessary for the administration of the division, the office is responsible for the duplication of papers and documents for the coroners courts and also for hospitals and other persons with a *bona fide* interest in the divisional reports.

DIVISION OF OCCUPATIONAL HEALTH AND POLLUTION CONTROL

Director: Alan Bell, M.B., B.S., D.I.H.

Locations: (a) Joseph Street, Lidcombe
(b) 86–88 George Street North, Sydney (Water Pollution Control Branch)

FUNCTIONS AND ORGANIZATION

The two main responsibilities of the division are briefly:

(i) to assist in safeguarding the health of the industrial community;

(ii) to administer the N.S.W. Radioactive Substances Act, 1957, the Clean Air Act, 1961, and the Clean Waters Act, 1970.

The division consists of five branches, namely, Industrial Hygiene, Medical, Radiation, Air Pollution Control, and Water Pollution Control. Each branch undertakes many specialized activities, or aspects, of its overall broad functions.

VISITORS FROM OVERSEAS

The division was visited by several overseas colleagues, including:

Mr E. Z. Abidin, Assistant Under Secretary, Ministry of Health, Kuala Lumpur, Malaysia.

Dr P. Allingham, Assistant Director, Occupational Health and Toxicology, New Zealand Department of Health.

Dr M. Cheret, Ministry of the Environment, France.

Mr M. R. Diamante, National Science Development Board, Manila, Philippines.

Dr E. Emett, Department of Environmental Health, University of Cincinnati, U.S.A.

Mr R. R. Harcourt, Assistant Director, Division of Public Health, Department of Health, Wellington, New Zealand.

Dr W. J. Netelenbos, Senior Medical Officer, Philips Medical Service, Eindhoven, Holland.

Dr F. J. Pepys, Brampton Hospital, London.

Professor R. Rylander, National Institute of Public Health, Stockholm, Sweden.

Dr T. I. Simedi, State Oil Corporation, Djakarta, Indonesia.

Dr C. P. Straub, Consultant on Environmental Engineering, Regional Office for the Western Pacific, World Health Organization.

Dr K. Sutarman, Professor of Physiology, University of Indonesia, Djakarta.

Dr K. Suwarnarat, Department of Health, Bangkok, Thailand.

Dr Yoder, Esso Corporation, U.S.A.

ACCOMMODATION

During the year the newly formed Water Pollution Control Branch was housed, and its laboratories commissioned, at the division's former city premises.

STAFF

The division's authorized establishment was increased by 15 to a total of 115.

(i) Resignations and Appointments

During the year Dr G. J. Cleary resigned to accept a senior position relating to environmental pollution with the World Health Organization, Geneva, and Mr J. Pottinger was appointed Director of Environmental Control, Department of Labour and Industry, Tasmania.

Mr W. E. Foskett, of the Radiation Branch, resigned to accept a position with the N.S.W. Department of Mines, on environmental problems.

During the year the Water Pollution Control Branch was formed; Mr D. D. Moore, formerly Senior Preservation and Research Engineer of the Maritime Services Board of New South Wales, was appointed as the principal engineer.

(ii) Visits Overseas

Dr A. Bell was a consultant to the First Symposium on Occupational Health in South East Asia which was held in Singapore.

Mr J. G. Hughes received a National Health and Medical Research Council Travelling Fellowship and visited several countries to study developments in the design and evaluation of items of personal protective equipment. He was also appointed temporary adviser to the World Health Organization and conducted a review of current *National Standards of Respiratory Protective Devices*, with a view to the eventual production of suitable international requirements for such items.

Mr R. P. Murphy visited several countries in the Western Pacific Region as a member of the World Health Organization's Environmental Pollution Control team.

Mr J. J. Wright attended a WHO training course on Coastal Water Pollution Control, which was held in Copenhagen.

(iii) Academic Successes

The following qualifications were obtained:

Miss C. Gaudat, B.Sc. (University of New South Wales).

Miss J. Graf, B.Sc. (Australian National University).

Mr M. Hussain, Ph.D. (University of Sydney).

Mr F. Koo, B.E. (University of New South Wales).

REPRESENTATION ON COMMITTEES AND NEW SENIOR APPOINTMENTS

Divisional staff are on approximately sixty technical, scientific, medical, and nursing committees. New appointments included:

Dr A. Bell to the Permanent Commission and International Association on Occupational Health, to the Technical Advisory Committee of the State Pollution Control Commission, as a member of the Australian Academy of Science's Working Group on the "Advantages and Disadvantages of the Use of DDT In Australia" and to the International Editorial Board of Environmental Health, *Excerpta Medica.*

Miss N. Bundle to the Occupational Health Committee, National Health and Medical Research Council and to the Nursing Subcommittee of the Permanent Commission and International Association on Occupational Health.

Mr A. Campbell as Member of the Board of Environmental Studies, University of Newcastle.

Mr J. G. Hughes to the Working Group on Safe Design of Children's Night Wear.

Mr A. T. Jones to the Workers' Compensation (Dust Diseases) Board Construction Work Committee.

Dr E. O. Longley as Provisional Australian Delegate to the International Association of Rural Medicine, as Chairman of the International-Departmental Zoonoses Committee, and to the Vibration Subcommittee of the National Health and Medical Research Council.

Mr D. D. Moore to the N.S.W. Branch Committee of the Australian Water and Waste Water Association.

Mr R. P. Murphy to the Air Pollution (Reference) Subcommittee of the National Health and Medical Research Council, and to the Norfolk Island Pines Committee.

Mr A. Smith as Vice-Chairman of the N.S.W. Branch Executive of the Australian Institute of Radiography.

Mr J. J. Wright as Vice-President, N.S.W. Branch, Australian Public Health Association.

STATISTICAL DATA

(1) Industrial Hygiene Branch

	1971	1970
Total number of visits	2,032	1,781
(a) Agricultural health	188	147
Field cholinesterase tests	499	400
Lung function tests	498	100
(b) Departmental safety programme	190	155
(c) Ergonomics	175	107
(d) Occupational noise	228	219
Community noise	219	174
(e) Personal protective equipment	7	47
(f) Industrial hygiene and toxicology	871	860
Inspections for workers compensation (dust diseases) board	154	..
Inspections for metropolitan water, sewerage and drainage board	140	90
(g) Inspections of theatres and halls	7	10

(2) Medical Branch

Total number of visits and examinations	2,072	1,596
(a) Investigations by medical officers	28	39
(b) Medical examinations and spirometry	781	747
(c) Medical examinations conducted on behalf of dust diseases board	1,123	720
(d) By adviser, occupational health nursing	42	72
(e) Occupational psychology	98	18
Pathology Laboratory: Total number of tests	10,488	9,865
Blood slides examined for evidence of lead poisoning:		
(1) sent in by factory medical officers	1,056	2,409
(2) from patients seen at the division	509	313
(3) other pathology tests	7,867	7,143

(3) Air Pollution Control Branch

Total number of investigations and visits	3,671	2,967
Visits to factory premises (scheduled and non-scheduled)	2,692	2,064
Investigations of complaints, visits to complainants and councils	735	647
Tests at industrial premises	244	256
Pollution complaints received	3,083	..

(4) Radiation Branch

Total number of visits	1,404	1,313
Licensing investigations	136	174

(5) Water Pollution

Total number of field inquiries and investigations	285	34
Water quality surveys	40	..
Complaints received	291	..
Samples analysed	351	..

EDUCATIONAL ACTIVITIES

(a) Publications

Three articles were published overseas, namely:

"Measurement of Fatigue in Hot Working Conditions". *Ergonomics*, pp. 85–90; *14*; No. 1; Jan., 1971. R. B. Welch, E. O. Longley and O. Lomaev.

"Use of 103 Ru-labelled Fris (1, 10-Phenanthroline) Ruthenium (11) Chloride As a Marker in Digestion Studies With Sheep". *International Journal of Applied Radiation and Isotopes*, pp. 301–308; *22*; May, 1971. T. N. Tan, R. H. Weston and J. P. Hogan.

"First Symposium on Occupational Health in South East Asia. *Industrial Medicine*, pp. 34–35; *40;* Nov., 1971. A. Bell.

Nineteen articles were published in Australian journals; these included:

"Fatal Hydrogen Sulphide Poisoning Associated With Industrial Waste Exposure". *Medical J. of Aust.*, pp. 331–334; *1*; Feb., 6, 1971. R. E. Simson and G. R. Simpson.

"An Outline of the Water Pollution Control Programme for New South Wales". Proceedings of the symposium "The Advance of Process Automation", pp. 1–9; Feb., 1971. J. J. Wright.

"Dosage Reduction". *The Radiographer*, p. 6; *17*; March, 1971. A. R. B. Smith.

"Thalassaemia Minor in Industry". *Medical J. of Australia*, pp. 801–803; *1*; April, 10, 1971. R. E. Simson and A. Shandar.

"Air Pollution From Wood Waste Incineration". *Clean Air*, pp. 26; May, 1971. R. P. Murphy and J. F. Pottinger.

"The Dangers of Proteolytic Enzymes to Workers". *Medical J. of Aust.*, p. 1242; *1:* June, 5, 1971. R. E. Simson and G. R. Simpson.

"The Control of Dust In Tunnelling & Excavation Work". *Australian Safety News*, p. 21; *42;* July/August, 1971. A. T. Jones.

"Occupational Exposure to Inorganic Mercury: A Review of Medical Surveillance Over a Ten-Year Period". *Medical J. of Aust., pp.* 1005–1008; Nov. 13, 1971. A. Shandar and R. E. Simson.

"An Unusual Occupational Hazard". *Medical J. of Aust.*, pp. 1018–1020; *2;* Nov., 13, 1971. R. Barnes, A. T. Jones, G. R. Simpson and A. Bell.

"The Design of Dials". *Design Australia*, pp. 18–20; Dec., 1971. R. B. Welch.

"The N.S.W. Clean Waters Act, 1970". *The Australian Health Surveyor*, pp. 7–11; September, 1971. J. J. Wright.

The two new departmental publications were:

"Heat and Comfort in the Factory and Office".

De Morbis Artificum: "A Newsletter for N.S.W. Occupational Health Nurses".

(b) Lectures

Five hundred and ninety-one lectures were given to approximately sixteen thousand people. Many papers were delivered at professional societies, conventions, congresses, seminars and symposia, including:

American Industrial Hygiene Conference, Toronto, Canada. "An Anthropometric Survey of Australian Male Face Sizes", J. G. Hughes.

ANZAAS Conference, Brisbane—

(a) "The Mass Spectra of Quinolizidines", Dr M. Hussain, J. S. Robertson and T. R. Watson.

(b) "The Metabolism of Quinolizidines", Dr M. Hussain, J. S. Robertson and T. R. Watson.

Australian Refuse Disposal Conference, Sydney. "Fires in Coal Mining Wastes: A Review of Causes, Procedures, Legislation and Pollution", A. Campbell.

Australian Society for Occupational Medicine—

(a) "Detrimental Effects of Wood Dusts", Dr R. Barnes.

(b) "Recent Advances in Byssinosis", Dr R. Barnes.

(c) "The Occupational and Social Implications of Significant Blood Alcohol Levels Detected By Breath Analysis in New South Wales Drivers", Dr R. E. Simson.

Canberra (A.C.T.) Breath Analysis Section and Police Prosecutors. "Breath Analysis Scheme for Blood Alcohol Saturation", Dr R. E. Simson.

First Symposium in Occupational Health in South East Asia, Singapore—

(a) "Some Views on Occupational Health Services", Dr A. Bell.

(b) "The Role of the Adviser, Occupational Health Nursing", Miss N. Bundle.

(c) "Development of Industrial Hygiene Services in New South Wales", A. T. Jones.

(d) "Acrylamide Poisoning", Dr R. E. Simson.

International Labour Office Conference in Pneumoconiosis, Bucharest—

(a) "Hygienic Control of the Occupational Hazard Due to Exposure to Proteolytic Enzyme Dust", Dr R. E. Simson.

(b) "Byssinosis in New South Wales", G. R. Simpson.

Mining Environmental Congress, Melbourne. "Air Pollution and the Mining Industry", R. P. Murphy.

National Convention, Society of Automotive Engineers, Melbourne. "Air Pollution and the Motor Vehicle", R. P. Murphy.

National Gas Seminar, Sydney. "Air Pollution and Wood Waste Incineration", R. P. Murphy.

Royal Australian Chemical Institute, Sydney. "Laboratory Safety", A. T. Jones.

Symposium on the Advance of Process Automation, Sydney. "A Decade of Air Pollution Control", J. Court.

Seminar on Occupational Health and Hygiene, Sydney—

(a) "Medical Services in Industry", Dr A. Bell.

(b) "Executive Health", Dr E. O. Longley.

(c) "The Value of Scientific Assessments of the Work Environment", A. T. Jones.

(d) "The Value of Occupational Psychology", J. G. Allen.

Symposium on Process Waste Disposal, Sydney. "Control of Acid Fume From Dross Reprocessing", J. McLeod, L. Ferrari and H. Scheltema.

In addition, the division gave lectures at several agricultural field days, at several university undergraduate and post-graduate courses and at courses organized by the division on topics such as "Ergonomics", the "Safe Use of Ionizing Radiation in Industry" and T.W.I. training courses on "Safety".

The topic chosen by the National Health Week Council for 1971 was "To Pollute is to Perish", the division became involved in a number of programmes displaying the work done in the field of pollution control. A highlight of "Health Week" was a seminar attended by approximately 150 senior secondary school pupils. Lectures were given by officers of the division on all fields of pollution control and there was a display of modern equipment used by the division.

RADIATION BRANCH

Officer-in-charge: Mr H. M. Whaite, B.E.

LICENCES UNDER THE RADIOACTIVE SUBSTANCES ACT

Two types of licence are granted under the Act, namely, those covering radio-active substances and irradiating apparatus, including X-ray units and linear accelerators. For administrative convenience items such as teletherapy units, which satisfy the definition of "irradiating apparatus" but which contain a radio-active substance, are classified as the latter.

Applicants are assessed in terms of their experience and qualifications, and also with respect to the facilities they possess, or will obtain for their proposed activities. Each application is considered individually by the Radiological Advisory Council, special conditions imposed if deemed necessary, and a recommendation made to the Under-Secretary. Table I summarizes the number of licences issued and the changes made during the year.

Table I

Licence category	X-ray (X) or Radio-isotope (R)	Licences at 31.12.70	New licences issued during 1971	Cancellation of licences during 1971	Licences at 31.12.71	Percentage change during 1971
Medical	X	348	26	27	347	..
	R	75	9	..	84	+12
Hospital (scientific and research, medical)	X	212	23	2	233	+10
	R	110	10	17	103	− 6
Dental	X	1,085	59	48	1,096	+ 1
Veterinary	X	89	25	..	114	+28
	R	5	5	..	10	+100
Chiropractic	X	89	12	10	91	+ 2
Scientific and research (not in hospitals)	X	56	11	2	65	+16
	R	192	22	18	196	+ 2
Industrial	X	88	23	1	110	+25
	R	198	37	29	206	+ 4
Commercial	R	33	6	5	34	+ 3
Total	X	1,967	179	90	2,056	+ 5
	R	613	89	69	633	+ 3
Combined Total	X and R	2,580	268	159	2,689	+ 4

Whilst there was some expansion in the use of ionizing radiations, it was not at the high rate of previous years. With X-rays, the highest rises occurred for veterinary radiography, X-ray spectrographs, diffraction equipment and fluorescence analysers in scientific work, and the use of industrial X-ray machines for non-destructive testing purposes.

With radio-active substances, the main rises occurred in regard to their use in medicine, particularly in pathology, and in veterinary practice, especially the use of ophthalmic applicators for treating eye conditions in cattle.

FIELD INSPECTIONS

There was an increase of 17 per cent in the number of field inspections made in 1971 compared with 1970. The most significant rises occurred with respect to the use of radioisotopes in hospital and other laboratories; as can be seen in table II such inspections increased by 166 per cent.

TABLE II

Category	X-ray or radioisotope	Number of inspections		Category totals	
		License	Non-license	1970	1971
Medical	X	12	157	167	169
	R	3	8	4	11
Hospital	X	1	173	138	174
	R	8	37	5	45
Dental	X	29	720	693	749
Veterinary	X	13	79	64	92
	R	..	1	..	1
Chiropractic	X	9	46	55	55
Scientific and research	X	5	10	20	15
	R	17	92	53	109
Industrial	X	15	31	51	46
	R	24	49	55	73
Commercial	X	..	..	1	..
	R	..	..	5	..
Transport	R	..	1	2	1
Total	X	84	1,216	1,189	1,300
	R	52	188	124	240
Combined Total	X and R	136	1,404	1,313	1,540

In the course of these visits, twelve defective fluoroscopic tables were found. These had recently been imported and installed in various hospitals by the one agent. They did not comply with the requirement of the *Code of Practice* that "to reduce lateral escape of radiation, a metal enclosure should extend from the tube housing to the panel or table top, enclosing the diaphragm system". The hospitals concerned, and the Department of Public Works were advised, and in each case, steps were taken to correct the fault.

VISITS TO COUNTRY HEALTH DISTRICTS

As shown in table III, a reasonable spread of visits to country health districts was maintained. Each visit comprised an average of nine inspections. The distribution between districts has not changed significantly over the last few years. Regrettably the Broken Hill Health District was not visited, but it is hoped to rectify this in 1972.

TABLE III

Health district	Number of times visited
Metropolitan (outside Sydney and suburbs)	7
Newcastle	9
North Coast	4
South Coast	9
Western	7
Northwestern	4
Riverina	4
Broken Hill	..
Total	44

FILM BADGE SERVICE

Despite a scheme of rationalization based on one of the 1965 recommendations of the International Commission on Radiological Protection, the number of persons and organizations covered by our service continues to grow. The particular recommendation states that "for workers who have been identified as being in conditions of work such that their exposure is most unlikely to result in doses exceeding three-tenths of the annual maximum permissible doses, individual monitoring and special health supervision are not required".

Though a number of film-badge participants fulfil the above condition, the branch has not discontinued the service to them. However, the issues and returns of their films are closely scrutinized to ensure that there is no undue wastage, and that their professed interest in personnel monitoring (which is the main reason for a continuance of the service) is being maintained.

Table IV compares the coverage given by the service in 1971 with that in 1970.

TABLE IV

Category	Number of organizations		Number of persons		Persons per organisation	
	1970	1971	1970	1971	1970	1971
Medical	96	101	263	278	2·7	2·8
Hospital	130	157	1,255	1,248	9·7	7·9
Dental	145	151	470	493	3·2	3·3
Veterinary	43	47	140	156	3·3	3·3
Chiropractic	33	37	52	56	1·6	1·5
Scientific and Research ..	72	77	324	403	4·5	5·2
Industrial	63	61	364	386	5·8	6·3
Total	582	631	2,868	3,020	4·9	4·8
Percent increase over particular year	+12	+8	+12	5	..	− 2

INDUSTRIAL RADIOGRAPHY

During the year, only one 2-day course was given to industrial radiographers, as a prerequisite to licensing. Other industrial radiographers with satisfactory qualifications and/or experience were also granted licenses.

There was a number of minor incidents, including one in which a coat containing a film-badge was left on an isotope container for several hours, but, as the table V shows, no individual received an exposure in excess of the maximum permissible dose of 5 rem for the year.

TABLE V—ANNUAL DOSAGE DISTRIBUTION AMONGST INDUSTRIAL RADIOGRAPHERS, 1970 AND 1971

Year	Dosage (rems)	0–1	1–2	2–3	3–4	4–5	Over 5	Total
1970	No. of persons ..	138	10	3	1	..	..	152
	Percent of total ..	91	6	2	1	..	..	100
1971	No. of persons ..	120	9	3	1	..	..	133
	Percent of total ..	90	7	2	1	..	..	100

THE HAZARDS OF RADIO-ACTIVE SUBSTANCES IN FIREFIGHTING

This matter has been under discussion between the Board of Fire Commissioners, the Civil Defence Organization, the Australian Atomic Energy Commission, and this department for several years.

During the first half of 1971, joint inspections of selected premises were carried out by officers of the Board and the Branch. These resulted in the formulation of a list of recommendations covering the storage, handling and transport of radio-active substances from the aspect of the protection of persons during firefighting, and the safety procedures to be adopted in the event of a fire. These recommendations include the display of approved signs at the points of entry to buildings, and at locations where readio-active substances are stored or used, the provision of storage vaults and safes having a fire-resistance of four hours, and the marking of road vehicles transporting radio-active substances. They were firstly examined at a Conference consisting of representatives of the above-mentioned organizations, and then amended by the New South Wales Radiological Advisory Council. Initially, they will be implemented as conditions of licence; ultimately, they will be incorporated as regulations, after consultation with the other States has achieved uniformity.

RADIATION INCIDENTS

Five incidents were recorded during the year, one of which resulted in exposure of a finger. The eye may have been highly exposed in another, but it is unlikely that the remaining three resulted in excessive exposure of persons, or parts of persons:

(1) A research student in a university department opened a shutter on an X-ray diffraction unit in the belief that he was closing it, and exposed his finger for some seconds. This shutter has been modified by eliminating the positive-closing device that would normally have held it shut. In addition, the student had never used the equipment before, and had received only minimal training.

In this incident, the dose equivalent was not determined but was possibly of the order of 10 to 50 rem; consequently, there was no observable damage to the skin.

(2) A research student in a university department was believed to have exposed his eye to the beam of an X-ray diffraction unit. He was unfamiliar with the particular camera and, whilst using it for the first time, displaced a protective flap meant to prevent the emergence of X-rays should a beam-stop, or a fluorescent button in the beam-stop, be inadvertently left off the equipment. Opthalmic examinations to date have not shown any eye damage.

(3) A truck carrying 5 cobalt-60 sources totalling about 520 millicuries, in transit from Sydney to Queensland, smashed through the rail of a bridge in northern New South Wales, and plunged 150 feet down an embankment, killing the driver. The source containers were intact though the padlocks were damaged. They have since been replaced with a heavier type lock. No one was unduly exposed to ionizing radiations.

(4) During a 3-monthly audit of the radium stock at a women's hospital, it was found that a 10-milligram tube was missing. It is believed that it was lost about 10 days beforehand, when a supply of radium was returned to the safe at the end of a gynaecological treatment, but it was not correctly accounted for. Despite extensive monitoring, the missing tube could not be found, and it is suspected that it was thrown out with discarded dressings, and ultimately buried at a garbage tip. Since this incident, the hospital has introduced modified procedures, including the checking of the returned radium during daylight hours instead of during the night, if removal takes place at night. Each time, the total radium content of the safe will also be reaudited.

(5) A total of 75 milligrams of radium, comprising two ovoids and three tubes, was apparently lost in the sewer of a city hospital by a patient undergoing gynaecological treatment. This woman, a migrant with a poor knowledge of English, used the toilet facilities instead of following the indicated procedures for such cases.

All underground sewers were monitored from the surface with sensitive detection equipment, but no radiation other than background was found. The sources were considered to have travelled beyond the confines of the hospital grounds, so adjacent sumps in the sewerage system were examined, all with negative results. An inspection and monitoring were also carried out in the treatment plant before the ocean outfall, but nothing was detected.

TESTING OF SHIELDING MATERIALS

At the request of a company producing such material, three different types of concrete were checked for their radiation transmission relative to ordinary concrete. They were intended for use in diagnostic and superficial-therapy premises, and the tests were carried out over a range of kilovoltages from 80 to 135.

A cast concrete, in which beach-sand minerals comprised the fine aggregate, gave an attenuation the same as $2\frac{1}{2}$ times its thickness of ordinary concrete. The same material, pressed in the form of concrete tiles gave a ratio of $3\frac{1}{4}$ times, partly due to a higher density resulting from the pressing. The corresponding figure for a barium concrete, in which barytes comprised the coarse aggregate, was 9.

Apart from the use described above, a possible application of these materials would be in the construction of industrial radiography exposure rooms in restricted areas, that is, where lack of floor space prevents the use of ordinary concrete of sufficient bulk to provide satisfactory shielding.

Although still considered as radiosensitive as the blood-forming organs and the gonads in New South Wales legislation, the eye was removed from the list of "critical organs and tissues" by the 1962 recommendations of the International Commission on Radiological Protection, except in the cases where it is exposed to radiation of high linear energy transfer, such as high-energy neutrons.

Consequently, provided legal requirements regarding permissible dosages are satisfied, there is no justification on providing lead-glass viewing windows in diagnostic X-ray practice, where the operator behind a shield will only be exposed to scatter radiation. Also, it is unrealistic to provide a lead-glass viewing window, of, say, 0·5 mm equivalent when the blood-forming organs and gonads are only protected by a mobile steel shield of 0·1 to 0·2 mm lead equivalent.

At the request of the Government Architect's Branch, the lead equivalence of common plate glass was determined, using the scatter radiation at various distances from a pelvic phantom exposed to 100- and 150-kilovolt filtered beams. It was found that a 1-inch thickness of the plate glass supplied was equivalent to about one-eight millimetre lead.

This information will be used in the planning of protective viewing windows for future X-ray departments.

ENVIRONMENTAL SURVEYS

Low-level radio-active wastes from the Australian Atomic Energy Commission's Research Establishment at Lucas Heights are discharged into the Woronora River, in accordance with a formula agreed upon with the State authorities. Periodical surveys of the river continued during the year, and special attention was paid to the zinc-65 content of oysters. The results showed that the concentrations of zinc-65 in their flesh were well within permitted limits.

The discharge of radio-active liquid waste into the sewerage system is regulated by limits specified in the Radio-active Substances Regulations. In view of the increasing use of these substances, particularly for diagnosis and therapy in hospitals, it was decided to monitor the effluent from a large metropolitan hospital for one of the biologically most important nuclides, namely, iodine-131. Suitable facilities were made available by the Metropolitan Water, Sewerage and Drainage Board, and sampling was carried out on a continuous basis over many weeks. The results showed that the concentration of this radio-nuclide was well within the permitted maximum. However, because of the intermittent nature of the discharge of radio-active effluents into sewers, it is proposed that more extensive measurements should be made.

INSTRUMENT REPAIR WORKSHOP SURVEY

Instrument repair workshops are likely to handle equipment containing luminous material. In the older instruments, particularly those dating back to the period during or immediately after the last world war, this is likely to be highly radio-active. Consequently, in order to assess the levels of contamination in these workshops, a survey has been started by the despatch of a preliminary questionnaire to thirty-six companies. Out of twenty-two replies received, seven have affirmed that they repair instruments containing radio-active material. A follow-up of the fourteen non-respondents is proceeding.

MICROWAVES AND LASERS

The number of such devices continues to increase, the main use of microwaves being in cooking ovens and of lasers in surveying and university demonstrations. Bodies such as the Standards Association of Australia and the Radiation Health (Standing) Committee of the National Health and Medical Research Council have been concerning themselves with appropriate standards of construction and safety.

On receipt of a new, more accurate monitor, the branch intends to carry out a comprehensive survey of the distribution and safety of the microwave cookers, already in use in this State.

INDUSTRIAL HYGIENE BRANCH

Officer-in-charge: Mr A. T. Jones, B.Sc.

The appointment of additional scientific staff resulted in a considerable increase in field investigations, the development of new analytical techniques and more detailed studies of certain problems such as dust from excavation work, pulmonary function testing in the cotton industry and a survey of chemical moulding sands in foundries.

Much of the work done was the day to day investigation of a wide variety of problems in, or related to, agricultural health, ergonomics, industrial hygiene, toxicology, noise, personal protective devices and safety.

Investigations of interest were:

(1) INDUSTRIAL HYGIENE AND TOXICOLOGY

(i) Chemical Sands in Foundries

Premixed chemical moulding sands are used in foundaries in increasing quantities. Resins, based on furane and phosphoric acid, methylene bis di-isocyanate, urea- and phenol-formaldehyde sodium silicate, and carbon dioxide are used. Potential exposure exists in the mixing stage, the formation of the moulds and from distallation and combustion products during casting and standing.

A survey showed, in some instances, levels of exposure to formaldehyde, furane and methane di-isocyanate at which respiratory and eye irritation could be anticipated. Modifications were made to the processes and exposures reduced to acceptable levels.

(ii) Fumigation of Shipping Containers

(a) In co-operation with shippers, experimental fumigations with methyl bromide in containers were carried out on bulk loaded cargoes of oats and sheepskins. Distribution of gas within containers was complete in about 24 hours and fumigations were successful. No gas was detected on arrival in the United Kingdom and the containers were safe to enter for unloading.

(b) Several incoming containers, fumigated in the United Kingdom with methyl bromide, were tested on arrival in Australia for residual gas. No methyl bromide was detected and unloading was allowed to proceed.

Methyl bromide fumigation of loaded containers immediately prior to shipping is a satisfactory and safe procedure provided that the *Code of Practice* developed by the branch with the shippers in 1970, is adhered to.

(c) Complaints were received from one container depot of eye and upper respiratory irritation when unloading a cargo fumigated overseas with methyl bromide containing chlorpicrin (2 per cent by volume) as an indicator. Chlorpicrin, sufficient to cause the irritation, was detected. It seems this gas mixture, when applied from a cylinder, differentially releases methyl bromide, the chlorpicrin becoming concentrated in the cylinders over a period. The final gas application from the cylinders is thus predominantly chlorpicrin, which, having a higher boiling point, is more persistent and can result in residues remaining at unloading. No methyl bromide was detected.

(iii) Plasma Arc Metal Cutting

Tests were carried out to determine fume concentrations in the breathing zones of operators from the first commercial use of plasma arc (or torch) for profile cutting seen in local industry. Earlier demonstration of the process by the agents, utilizing an efficient local exhaust ventilation, had not suggested any hazard from ozone, nitrous oxides or metallic fume.

However in industrial usage, utilizing downdraught ventilation through a gridded plate which was often occluded by the stainless steel and aluminium sheets being cut, high levels of breathing zone exposures were found as shown in table I.

TABLE I

Test	Metal	Total fume mg/m³	Chromium mg/m³	Manganese mg/m³	Nickel mg/m³	Iron (as oxide) mg/m³	Silica mg/m³	Ozone p.p.m.	Nitrogen Dioxide p.p.m.
1	Stainless steel	191·0 (operator)	7·1	3·8	11·4	105·0	..	Nil	0·2
2	Aluminium ..	480·0 (assistant) 22·0 (operator)	..	..	..	..	1·0	Nil	1·0

Fume concentrations were excessive except for manganese. Modifications to ventilation were suggested, together with an air supplied breathing apparatus as an interim measure. Further inspection after the above modifications were carried out did not indicate a significant improvement; the process has now been temporarily halted for redesign of the ventilation system.

(iv) Enzymes in Cleaning Products

Sampling and analytical methods for enzyme exposure in work environments have been evaluated and standards, techniques and control methods have been recommended. The use of enzymes in cleaning products has greatly decreased. The full report of the N.S.W. Technical Committee in Enzyme Cleaning Products, dealing with the technical and medical aspects of usage, will be published.

(v) Exposure to Benzol whilst French Polishing

During investigation of a request to assess ventilation and exposure to solvent vapours at a technical college, it was noted that benzol was used in some of the spirit stains supplied to students. Ventilation across the face of the spray booth was inadequate to control overspray which copiously entered the room atmosphere. It was pointed out the use of benzol had been banned from the furniture trades for some 20 years and should cease at once.

(vi) Solvents used for Art Restoration purposes

A variety of solvents, some of them hepatonic, were used in one large establishment under such conditions that inhalation and skin contact could occur. One instance of swabbing an art object with cotton wool soaked in benzol resulted in a breathing zone concentration of 30 parts per million; the skin absorption potcntial was obvious. Recommendations were made to cease use of benzol, to ensure good ventilation was available and that the skin should be protected. Pathology tests were negative.

Fumigation of books and paintings was performed in a small chamber with pentachlorophenol, p. dichlorobenzene, thymol or chloramine T. Changes to the methods used, including a sealed chamber, better ventilation and skin protection were recommended.

(vii) Ventilation of Wynyard Concourse

Investigations of carbon monoxide levels and ventilation in the Wynyard Concourse commercial premises was made following complaints and reports of one being closed because of alleged "pollution". Comparisons were made with conditions in the underground arcade in the newer Australia Square building.

In premises on the concourse, and in its arcade, temperatures were up to 19° F higher than outside air; in one instance where lighting also contributed to the heat load, 23° F higher. Air movements inside premises were low.

Carbon monoxide concentrations ranged from 10 to a maximum of 25 parts per million in the concourse area and to 30 parts per million near the Hunter Street entrance of the arcade. The carboxy-haemoglobin of employees in one area increased to an average of 2·5 per cent (non-smokers) during the day.

Whilst no health hazard was demonstrated, conditions were undoubtedly oppressive. Recommendations were made for positive mechanical ventilation (equipped for cooling in summer) to all the premises.

In the Australia Square Arcade temperatures were only 2° F above outside with a maximum concentration of 5 parts per million of carbon monoxide being reached; the better conditions resulted from a greater natural ventilation and spill air from the air-conditioning system.

(viii) Cotton Dust in Spinning Mills

(a) Two surveys, one in the metropolitan area and the other at a country mill were conducted in the cotton-spinning industry, in which dust levels have in the past been found in excess of the suggested maximum level of 1 milligram per cubic metre, have revealed three cases of byssinosis in one factory and four in another.

(b) Dust levels in all eight spinning mills in New South Wales have been monitored, and at the same time the forced expiratory volumes in 1 second (FEV_1) of employees, before and after shift, have been measured.

All dust levels exceeded the above standard, and in all mills falls in FEV_1 in excess of 0·1 litre were recorded, except in one mill using processed and dyed cotton. Falls of this magnitude are considered indicative of a potential development of byssinosis if dust exposures, above the recommended level, continue.

Because of the facilities of the recently equipped mobile respiratory unit, of the Royal Prince Henry Hospital, it is now possible to carry out investigations into alleged dusty conditions in greater depth than previously.

(2) METROPOLITAN WATER, SEWERAGE AND DRAINAGE BOARD

Considerable time was devoted to the surveillance of dust exposures and to the use of dust suppression equipment on jackpicks in the Board's projects. In general. dust exposure conditions were satisfactory, although high dust levels occurred in several trenches. Contract work to the Board continues to result in unsatisfactory dust exposures; few contractors have been observed to utilize anything but rudimentary methods of dust control.

Evaluation of use of the coil type dust suppressors has been finalized. When correctly used, dust concentrations are reduced by over 95 per cent with considerably less water usage than the cone shaped type of suppressor. Both require to be mounted near the pick point, with sufficient water running to keep the steel cool and to run as a continuous stream from its point.

As table II shows average dust concentrations have continually fallen since the dust evaluation service was introduced in 1966.

TABLE II

Year	Comments	Average dust concentration
		particles/cubic centimetre
1966		1420
1967		1600
1968		1680
1969	Cone shaped suppressor introduced.	690
1970		540
1971	Coil and cone suppressors introduced.	320

(3) WORKERS COMPENSATION (DUST DISEASES) BOARD

Additional to investigations to determine the dust exposures of employees making application for, or receiving, compensation, a number of industry surveys were conducted, namely:

(i) Building Excavations

Considerable concern was expressed at the obvious high levels of dust exposure in building excavations in the metropolitan area, where the majority of work is in sandstone.

A study of the determined dust levels in the breathing zones of workers in 20 excavations, inspected during the previous year, indicated a severe problem; these varied between 570 to 10,000 particles per cubic centimetre. A survey this year of 12 excavations showed breathing zone concentrations ranging 230–1,350 particles per cubic centimetre.

Meetings have been held with the government departments and private organizations involved and it is anticipated legislation will be introduced requiring the use of dust control mechanisms. The efforts of the Metropolitan Water, Sewerage and Drainage Board, show that satisfactory control can be achieved.

(ii) Clay Pipe and Tile Manufacture

A dust exposure survey of this industry, covering nine plants was completed. The free silica content of the clays used was in the range 28·5 to 44 per cent for which an industry standard of 400 particles per cubic centimetre by Owens instrument or, by gravimetric respirable sampling, 0·75–0·5 milligrammes per cubic metre, depending on silica content, would be applicable.

The highest dust concentrations were obtained from grinding, mixing operations, and dragging from coal-fired kilns. Whilst all exceeded the standards there was considerable variation from plant to plant, one being consistently more dusty than the remainder.

The overall average dust concentrations ranged 90 to 1,800 particles per cubic centimetre (all tests) and at two plants 0·26 to 2·10 milligrammes per cubic metre at the mixers and in the tile press and pipe machine areas.

(iii) Asbestos Cartage from Waterfront

The asbestos dust exposures to truckdrivers, whilst picking up asbestos at wharves and delivering to various importing agents and manufacturers, have been evaluated for a number of Canadian shipments. All consisted of chrysotile mineral, fairly finely milled. Bags were both loose and on pallets and, in several instances, the bags were broken. The handling of broken bags in the hold of a ship was also evaluated. No respiratory protection was worn either by drivers or waterside workers.

The following breathing zone levels (5 to 100 microns) were found:

	fibres/millilitre
(1) Stacking loose bags on pallets on open air wharf	3
(2) Stacking loose bags on pallets in shed	range 1–9 mean 3
(3) Placing loose bags on truck in shed	range 7–16 mean 10
(4) Fork lifting pallets onto truck on wharf	2
(5) Handling bagged asbestos in hold (some broken)	16

Whilst the receipt of asbestos shipments is intermittent, each occupies several days unloading and cartage. However, whilst on a time weighted average, exposures are not excessive, greater precautions should be taken during handling procedures and respiratory protection worn, particularly when dealing with loose and broken bags.

(4) AGRICULTURAL HEALTH

(i) Poisoning from Pesticides

A survey was conducted of hospitals, predominantly in rural areas, to ascertain the number of poisoning cases arising from the field application of pesticides.

Some fifty-four poisonings were reported, most due to organic phosphate compounds, but also including carbamates, chlorinated hydrocarbons, and the fumigant, methyl bromide. The greatest single cause of poisoning resulted from the use of the organic phosphate insecticide "Mevinphos", which accounted for twenty-one of the cases reported.

(ii) Chlorinated Hydrocarbon Insecticides—Home Preservation

For many years toxic chlorinated hydrocarbon insecticides, such as chlordane and dieldrin, have been used in house treatments for termite and border control. Their application is often in confined spaces where ventilation is minimal and ample opportunity for skin contact exists.

Potential skin contact was measured by deposition on filter papers, strategically placed on the operators protective clothing. Blood samples were collected to measure the absorption of the pesticides after each job. In those instances where excessive depositions, calculated by relating to the median toxicity level of insecticide, were found, correspondingly raised chlorinated hydrocarbon levels in blood were found on analysis.

The above findings stress the need for continued caution. The use of recommended protective clothing is essential if over absorption is to be avoided and acute or chronic disease avoided.

(iii) Pesticide Bulk Storage

The cottongrowing industry in the Wee Waa-Narrabri districts is a large user of a variety of insecticides and weedicides, and significant amounts are often held in open field storage. In the majority of cases few precautions are taken and the potential exists for spillages to contaminate nearby watercourses and soil.

In co-operation with the Namoi Shire Council inspections were made of the areas. Recommendations were made that access to storages should be restricted by fencing them and having lock up facilities, that storage should, as far as possible, be on concrete, with absorptive material available to soak up spillages, and that each area be bunded so that any gross spillage is contained and later appropriately disposed of.

(iv) Cholinesterase Surveys

Approximately five hundred field blood cholinesterase tests were carried out in orchards and market gardens; a number of graziers were also included. Ten persons were detected with levels low enough to be advised against further contact with organic phosphate insecticides until their levels returned to normal. This is slightly higher than the previous two years and resulted from a number of poisonings with Mevinphos in the Blacktown market garden area.

(5) ERGONOMICS

(i) Tenosynovitis

Using a Hettinger apparatus, an industrial survey was carried out to measure workers' predisposition to tenosynovitis. The apparatus measures skin temperature on the back of the hand before and after a half minute of localized vibration. Vibration initially reduces a local blood circulation, causing a drop in skin temperature, then increases the circulation which causes the temperature to rise. Computation of the results obtained enables an index of predispotion to be calculated.

The original work of Hettinger, using pool typists from insurance companies, demonstrated a high correlation between the predisposition index and a history of tenosynovitis.

In the division's survey, over 600 factory employees have been tested and the results obtained compared with their medical histories of tenosynovitis. To date, a useful correlation has been found; the test could be used to allocate workers in industry to the jobs most suitable to them on the basis that a person having a high degree of predisposition should not be given a stressful occupation.

(ii) Chain Saws

Following the division's 1970 survey of vibration exposures resulting from twelve types of chain saws, redesign of some types to reduce vibration was undertaken by the manufacturer. One such saw, to which antivibration handles had subsequently been fitted, was exhaustively tested. The results indicated vibration from the saw was slightly worse than a second saw, from the same manufacturer, without anti-vibration fittings. This suggests all chain saws to which anti-vibration devices are fitted should be evaluated prior to distribution.

(iii) Work Place Design

Ten requests were made by industry for the assessment of work place or process design related to operator stress. Most of the recommendations made involved redesign of handtools, jigs and other smaller items of equipment and were successfully carried out.

(iv) Lighting

The most common defects found in a survey of fifteen factories and offices were due to insufficient light supplied to work areas, glare from light fittings and windows, reflections in the workers visual field and ceilings which were too dark.

(v) Electromyograph Studies

Measurements of muscular effort involved in lifting activities were made by electromyograph in tests involving two persons in which up to 112 pounds were lifted by various methods. The response of leg and back muscles during the lifting was measured. The results showed that, contrary to common belief, only a small percentage of available muscle strength in the legs and back was used while doing the lifting.

(vi) Thermal Comfort

Investigation of complaints of discomfort due to heat in industry in summer continued to show the main causes derive from high radiant heat load resulting from uninsulated factory roofs and low air movement within premises. Relatively simple design measures at the construction stage would overcome many of these problems. Installation of evaporative cooling systems has been found to greatly increase comfort in many of the factories investigated.

(6) PERSONAL PROTECTIVE EQUIPMENT

(i) There were significant changes in the pattern of items examined in 1971. Considerably less evaluation of half and full face filter respirators was undertaken; this was because of recent improvements in the design of this type of equipment. A summary of the work undertaken is shown in table III. The smaller number of items evaluated in 1971 was partly due to the lower number of respiratory protective devices submitted and also largely due to Mr J. Hughes' absence overseas for 15 weeks on a WHO Fellowship.

An increase occurred in the number of prototype air line respirators submitted. The number of units which failed to comply with the Australian Standard AS-Z18 is indicative of the difficulty manufacturers have had in making equipment to satisfy the positive air pressure and flow, and also the low noise level requirements. Much work is being done to overcome the latter problem.

Examination of eye protectors, forwarded through the Department of Labour and Industry for approval, increased.

The value of the publicity given to units approved, on recommendations from this branch, by the Department of Labour and Industry is shown by the increase of equipment brought in for testing immediately after publication of the approvals list.

TABLE III

Item	Number Tested	Approved by D.L.I.
Half facepiece respirators	30	11
Dust cartridges	10	9
Chemical cartridges	27	13
Combined dust/chemical cartridges	4	4
Full facepiece respirators	5	5
Canisters	12	6
Air Supplied respirators and hoods	24	8
Self-contained breathing apparatus	1	1
Safety helmets (sets)	28	20
Eye protectors (pairs)	102	92
Welding goggles	10	10
Welding helmets	15	14
Soaps and cleaners	5	(not applicable)
Gas detector tubes	2	1
Compressed air tests	5	3
Industrial gloves	20	18
Flammability of textiles (sets)	85	(not applicable)
Floor and floor finishing tests	8	6
Totals	393	221

(ii) Flammability of Clothing

During 1971, in co-operation with laboratories of the CSIRO and a textile manufacturer, considerable effort was directed at developing textile flammability test methods, on behalf of the Standards Association of Australia. As a consequence of these activities test methods are presently being published by the Standards Association as the Standard AS1176. These standards are to be used as the criteria for the manufacture of textiles of low flammability and for a revised code for children's nightwear.

(iii) Industrial Gloves

Gloves for use in industry are manufactured to combat a wide variety of potential hazards ranging from traumatic injury to corrosive chemicals. Work has commenced on the evaluation of certain types of industrial leather and polyvinyl chloride coated fabric gloves against solvents and chemicals and failure due to flexing. As a result of enquiries made overseas, test methods have been obtained which will extend present testing to a state more appropriate to the revision of the outdated Australian Standard. An abrasion testing machine has been purchased and apparatus for measuring tensile strength will shortly be installed.

(7) DEPARTMENTAL SAFETY

(i) Implementation of the departmental safety programme continues to be directed mainly towards departmental hospitals, though some activity was devoted to the scientific complex at Lidcombe.

Safety committees have been organized at each of the hospitals and are meeting regularly. The safety officer attends as many meetings as possible and also carried out inspections and follow up investigations of accidents.

Hospital accidents fall, in order of frequency, predominantly into the following categories;

(1) Slipping and falling.

(2) Lifting and carrying.

(3) Travelling to and from work.

(4) Patient behaviour.

(5) Miscellaneous.

(ii) Training

Short training courses at the Department of Labour and Industry, were attended by selected members of each safety committee. A series of firefighting lectures have been instituted at hospitals and divisions. To combat the number of lower back strains, a lifting and carrying training programme for nurses, domestics, and artisans has been implemented at most hospitals.

The organization of "Training within Industry" safety courses has been completed; hospital safety supervisors from each hospital will attend on a rotation basis, each course occupying a week.

(iii) Floors

A slippery floor evaluation programme was conducted at a number of institutions. Utilizing friction measurements made in the laboratory, recommendations have been made on such matters as the type of floor polish and polishing methods; these should considerably reduce the slipperiness of floor surfaces.

(iv) Statistics

Whilst the accident frequency rate was lower than in 1970, the severity rate was higher due to several serious accidents:

Year	Severity Rate	Frequency Rate
1969–70	1,286 per 1,000,000 man hours worked.	56·16 per 1,000,000 man hours worked.
1970–71	1,351 per 1,000,000 man hours worked.	53·7 per 1,000,000 man hours worked.

(8) NOISE

During the year much time was spent in producing the draft of a Community and Occupational Noise Control Bill. In the division's view, such an Act should, *inter alia*, include the licensing of factories which cause community noise problems and construction sites, the noise certification of noisy machinery, detailed provisions against noise nuisances and the control of noise associated with various forms of land and sea transport.

The interest of industry, local government and compensation authorities, as well as the general public, in noise problems has increased; this has been stimulated partly by publicity associated with degradation of the environment generally. As in the previous year, approximately half of the requests received for investigations related to community noise problems.

(a) Occupational Noise

(i) Monitoring

On advice from the division, several large firms are now monitoring their premises and taking corrective action; the division has been involved in training staff for this purpose.

(ii) Low Frequency Vibrators

A situation arose where very low frequency sound arising from testing vibrators, caused apprehension among employees. Although a maximum level of 124 dBA at 50 HZ was measured, no hearing effects are anticipated; on the other hand there were interferences with speech due to the sound pressure and vibration on the body.

(iii) Steel Fabrication in Dockyards

Measurements indicated a high hearing risk resulting from virtually continuous exposure to noise often in relatively confined spaces. Noise levels of 110 dBA were common; unfortunately, in many instances reduction is not practical and the use of personal protection also presents difficulties due to the large differences between the high and low levels of sound and possible effects on balance when working in elevated positions. In the apprenticeship section of the dockyard, treatment of the building with sound absorptive material and hearing protection have been recommended.

(iv) Pig and Calf Saleyards

In a large new building, which had considerable reverberation characteristics, and where pigs and calves were auctioned, owing to high levels of animal noises, ranging 90 to 100 dBA, there was a masking problem with consequent difficulty in communication during auctions. Corrective measures would be expensive as it would be necessary to acoustically enclose the selling area and to acoustically treat the underside of the roof of the building.

(v) Waterfront and Shipping

Investigations have been made into noise resulting from the operation of loading machinery on several new vessels. Continuous levels in the range 80 to 90 dBA have been recorded. Due to the intermittency of exposure, the levels do not constitute a risk to hearing, but are a source of annoyance and interfere with communication. There is a need for more attention to be paid to noise at the design stage of ships.

(*vi*) *Machinery Specifications*

There is increasing interest by purchasers of machinery to be informed as to the noise levels likely to arise from the use of machines. Considerable advice has been given on this important aspect of noise control.

(b) Community Noise

(*i*) *General*

When planning industrial undertakings, greater attention should be given to potential noise nuisances. This is particularly important when industries are decentralized to rural areas which have low background noise levels. Assurances should be sought from building applicants, that the noise aspect has been adequately examined. Some local authorities do, but as yet many do not give sufficient attention to this problem.

In the past year a number of complaints have been investigated of community noise caused by transport, mine ventilation shafts, beach sandmining, metal stamping, and from fans used in food stores.

Of some special interest were carwashing establishments, which even in areas of high daytime background levels, create sufficient noise in excess of the background to give rise to justifiable complaints from their neighbours. Complaints were also received from the weekend operation of these units. Control measures are often difficult because of site limitations.

(*ii*) *Discotheques, and Private Parties*

Investigations within discotheques have shown noise levels up to 115 dBA for prolonged periods; even short exposures produce tinnitus. Without overlooking the rights of individuals, in view of the current trend for excessive amplification, there is considerable public feeling for control, both with respect to the noise levels inside such places and outside.

The control of many aspects of community noise is under consideration by an Interdepartmental Noise Committee. Judged by the number of complaints received, parties and amplified music are the most important immediate problems. This division is co-operating with the Police Department in investigations and devising a commonsense and practical means of assessment and control. Between midnight and 3 a.m. many justifiable complaints have been received from noise clearly audible in excess of background.

MEDICAL BRANCH

Officer-in-charge: Dr E. O. Longley, M.B., B.S., D.I.H.

MEDICAL SERVICES IN INDUSTRY

The branch has been involved in drafting of standards for health services in industry and commerce; these will relate to the provision of first-aid boxes, first-aid rooms and health centres and equipment, and staffing by first-aiders, nurses and physicians to provide an occupational health service as recommended by the International Labour Organization in 1959.

A survey of medical services available to government departmental employees consumed a great deal of time for several members of the branch. The report which covers approximately 49,000 employees in 19 departments and in 1940 individual work locations is currently being finalized.

Conferences have been held with two departments on the advisability of instituting an occupational Health Service for their employees; in addition the branch was involved, with the State Planning Authority, in the early planning for occupational health services for the proposed Campbelltown industrial area.

A postal survey was conducted on behalf of the Interdepartmental Zoonoses Committee to determine the adequacy of medical services in N.S.W. abattoirs. The results indicated, generally, that medical services were inadequate in most and grossly inadequate in many abattoirs, and thus liable to be a significant factor in the epidemiology of brucellosis, "Q"-fever, and leptospirosis.

OCCUPATIONAL HEALTH NURSING

Two editions of a newsletter were released and have been very favourably received by the N.S.W. Occupational Health Nurses. The newsletter, named *De Morbis Artificum*, will provide the nurses with articles of interest, help to keep them up-to-date with progress in occupational health and provide a medium for sharing experiences.

In March, a meeting of nurses working in the Newcastle area was held. The programme included talks and discussions on noise, mental health and the type and value of medical records to be kept in an occupational health service.

The theme of the July educational session was "The Image of the Occupational Health Nurse" and in November it was "Skin Problems at Work". In March, a course was commenced on "Counselling for Mental Health", being held 2 hours 1 day a week for 12 weeks; twenty-five nurses participated. In addition an evening seminar was held for all participants of previous counselling training courses.

The Occupational Health Nursing Certificate course conducted by the N.S.W. College of Nursing commenced in May. The syllabus for the course was jointly revised by Miss Bundle, the division's adviser in Occupational Health Nursing, and the staff of the college. During the course many lectures and tutorials were given by members of the branch.

The general nurse training syllabus now includes a section on occupational health and training schools are now approaching the branch for guidance and lectures. To develop an awareness of the concept of occupational health is considered to be an important grounding for nurses.

Visiting industrial medical centres is still seen as the most important role of the adviser. There are now many more younger nurses working in occupational health than has been the case in previous years and by visiting them, at their places of work, it is possible to tailor advice and instruction according to their individual needs. The need to develop a preventive occupational health service is stressed in all visits.

OCCUPATIONAL PSYCHOLOGY

Mr J. G. Allen, Occupational Psychologist, has been involved in a continuing joint project, involving the Alexandria Clinic of Callan Park Hospital and the Royal South Sydney Hospital, to provide a mental health service to 5 industrial companies, employing about 10,000 employees, in the South Sydney area. The project includes treatment services, mental health consultations and a series of educational seminars for management. He has also been involved in the work rehabilitation programme at Callan Park Hospital which is a continuing project to rationalize and improve training of patients in the workshop of the industrial therapy unit.

The programme is based upon:

(a) segregation of patients into two groups according to prognosis;

(b) graded work jobs and progression of patients through these grades; and

(c) a systematic assessment of patients' progress.

The Industry Standing Committee of the N.S.W. Association for Mental Health produced a detailed report "Preschool Centres in Industry", which received widespread publicity and aroused considerable interest. Mr Allen is Chairman of the Industry Standing Committee.

A weekend seminar on role strain, an important aspect of mental health in industry, was conducted for the management of a large industrial company. Two successful 1-day seminars were held at Lidcombe for managers, personnel and safety officers, occupational health nurses and industrial medical officers. The first, on the topic "The Role of the Safety Officer", was attended by approximately 100 people and the second, on "Job Satisfaction", by about 120.

Ten employees with problems were counselled at the Lidcombe Counselling Clinic. In addition mental health consultations involving a further ten employees with problems were given to occupational health nurses and others.

NEWCASTLE STATE DOCKYARD

The appointment of Dr G. W. Danger as medical officer to the dockyard was mainly recommended on the grounds that a need existed for a preventive occupational health service. One of the most pressing needs is for a hearing conservation programme. Continuing studies of work absence patterns due to sickness and compensable injuries have been commenced in addition to a prospective study of injury patterns in specific disabilities discovered at pre-employment examinations.

Limited surveys have been carried out concerning the health of workers exposed to asbestos and lead.

ALCOHOL

The consequences of excessive drinking may be manifest both in industry and on the road. While the application and results of treatment modalities remain a matter of debate it is generally agreed that the early detection of such people may mean a better outcome in the long term with least damage to the "whole man" and his family from health, social and economic view points.

Dr Simson has continued to act as medical and technical adviser to the N.S.W. Police Department's Breath Analysis Section as well as acting as expert witness for the police and Crown. The branch has studied the data accumulated since the introduction, in December, 1968, of "Breathalyzer" legislation and is impressed with the evidence for the value of blood alcohol estimation as a pointer to problem drinkers. The scheme annually currently detects nearly 16,000 drinking drivers, their mean blood alcohol level being 0·16 g/100 ml.

As a preliminary investigation to test the validity of the foregoing impression 106 unselected consecutive subjects from the Sydney metropolitan area with blood alcohol levels equal to or greater than 0·2 g/100ml were studied.

Up to the present time thirty-five of these subjects have been interviewed (with one refusal). Of the interviewed group at least 70 per cent have a drinking problem; 85 per cent have serious family and economic problems; 29 per cent have had to change jobs or have had job security seriously threatened as a result of the traffic incident and 32 per cent were well under the influence of alcohol at the time of interview. The traffic and criminal records of the whole group show a tenfold to one hundred-fold increase in detected offences when compared with a control group of drivers.

This, and complementary evidence, indicate that some 4,000 problem drinkers are annually potentially accessible in the Sydney metropolitan area for treatment.

WORKERS' COMPENSATION (DUST DISEASES) BOARD

Dr E. O. Longley continued to be Chairman of the Medical Authority with Dr R. Barnes a specialist of the branch, as the boards' medical officer.

The number of medical examinations performed was 1,123, an increase of 59 per cent over 1970. The number examined for the first time was 673. The medical examination includes a clinical examination, a comprehensive questionnaire, a lung radiograph, pulmonary function testing by means of a vitallograph and, if necessary, exercise tolerance testing.

Twenty-eight workers were referred to the Thoracic Unit of Prince Henry Hospital for further investigations including gas diffusion studies and more detailed exercise tolerance tests with gas exchange measurements.

Fourteen attendances at the Radiology Department of the Thoracic Unit of Prince Henry Hospital were made. At these sessions case histories and chest X-rays were jointly discussed by chest physicians, radiologists and industrial medical officers. Many of these patients had been referred by the Dust Diseases Board.

The new certifications include seventy-one cases of silicosis, two of byssinosis and thirty of asbestosis. Further cases of mesothelioma and bronchogenic cancer have been reported related to exposure to asbestos dust. For fifteen asbestos workers who have died in the period between February, 1968, and December, 1971, eight deaths were due to bronchogenic carcinoma and three to mesothelioma. Introduction of regulations to control asbestos is considered to be an urgent necessity.

Sixteen factories and mines were visited to investigate matters relevant to dust diseases found in certain workers. Four surveys were carried out during this year—two into the incidence of byssinosis at factories at Rydalmere and Goulburn. The third was conducted into the potential hazards of asbestos spraying of buildings; of the eleven employees examined, one was judged to be a potential case of asbestosis. The fourth survey related to cement dust exposures.

At the request of Dr Longley, the Workers' Compensation (Dust Diseases) Board convened conferences to discuss the hazards of silica dust exposures in excavation work carried out in the metropolitan area. A number of recommendations were made, including regulations for compulsory wet drilling and jack hammer operations and the provision for "on the spot" fines for non-observance of the proposed regulations.

TOXICOLOGICAL INVESTIGATIONS

The inplant investigatory and advisory service, for so long a prominent feature of the division, has unfortunately partially lapsed due to shortage of medical staff and pressures of work arising from other quarters. However, the consultative content of the work by the medical staff has increased enormously. Medical monitoring for lead, mercury and pesticide exposures is still a major feature of the branch's activities.

The staff of a commercial undertaking, which was included in the investigation into the "Ventilation of the Wynyard Concourse", and which is referred to in the report of the Industrial Hygiene Branch, was examined at the commencement of work and at the end of the day to determine blood carbon monoxide levels. The carboxyhaemoglobin levels of non-smokers were 1·0 to 1·5 per

cent in the morning, rising to 2·0 to 3·0 per cent in the afternoon. In smokers, the carboxyhaemoglobin levels were higher; 1·0 to 4·0 per cent in the morning, rising as high as 7·0 per cent in the late afternoon. Levels above 5·0 per cent might have a health effect on those with coronary artery disease.

PATHOLOGY LABORATORY

Approximately 10,500 pathology tests were carried out; these were predominantly for evidence of exposure to heavy metals, pesticides, and solvents particularly the chlorinated hydrocarbons.

HUMAN KINETICS

Advice and assistance was given to a wide variety of factories, mines, installations of the N.S.W. Electricity Commission, safety groups, Education Department officers, hospitals, the N.S.W. Ambulance services, the Police Department, occupational therapists, the scouting movement, nursery school teachers, community health and occupational health nurses, and to the N.S.W. College of Nursing.

One hundred and twenty-seven lecture demonstrations were given to more than three thousand employees. One hundred and twenty-four sites were visited and thirty-two work studies carried out. Many of the latter resulted from visits to factories in which strain injuries had occurred. Work studies were also carried out in nine hospitals where the use of equipment, and alterations of manual handling methods produced a higher standard of safe working procedures.

A detailed report was submitted to the Hospitals Commission of N.S.W. on the "Ergonomic Design for Safer Nursing".

Recommendations were made with respect to the design of a wheelchair for loading disabled persons into international jet aircraft. Similarly, recommendations were made relating to a monorail and hoist system for loading and unloading patients into aerial ambulances.

LIFEJACKETS

Further assistance was given to the Maritime Services Board in the testing of lifejackets. On this occasion, in addition to testing flotation efficiency of jackets when used for adults, the jackets were also tested when worn by small children. From the results of these tests, lifejackets will be recommended suitable for use on ferries and in pleasure craft.

AIR POLLUTION CONTROL BRANCH

Principal engineer: Mr R. P. Murphy, B.E., A.S.T.C., M.I.E.(Aust.), A.M.Inst.F.

Because of the upsurge in public concern about environmental pollution, the Department of the Environment and the State Pollution Control Commission were established by the Government to supervise and co-ordinate the activities of existing pollution control organizations. Increasing attention is now paid to the total environment; to this end the division is represented on the Technical Advisory Committee of the Commission. The branch continues to carry out its executive functions of implementing the Clean Air Act in regard to the major industries, monitoring air pollution and carrying out research into its control.

STAFF

The staff was increased to thirty-six. Reorganization of the branch has resulted in it being divided into two main sections. There is now an Engineering and Inspection Section comprised of district engineers and technical officers who inspect and advise the industries in their areas on pollution control. One part of the Technical Services Section undertakes source testing and scientific investigations and provides laboratory services to the branch; the other carries out monitoring and data processing, compiles emission inventories and operates the complaints service.

INSPECTIONS AND SURVEYS

The activities of the branch during the year included 2,692 inspections of factories. The newly established complaints service received 3,083 pollution complaints from the public, of which almost 2,000 were investigated, the remainder being referred to the appropriate authority responsible for control.

Scientific staff carried out 145 stack emission tests at 61 industrial premises, and time lapse camera surveys were made at 18 locations to establish the frequency of visible emissions.

Work continued in the study of air pollution as a possible factor in the deterioration and death of Norfolk Island Pines along parts of the N.S.W. coast. This study involves officers of the branch, along with biologists and plant pathologists from other Government authorities.

The survey of atmospheric and vegetation concentration of fluorides in the vicinity of fluoride emitting industries has been expanded and at one major works extensive data has been collected on the effects of seasonal variations and changes in weather patterns, together with susceptibility of native flora to atmospheric fluorides. The results show the effectiveness of present control equipment and will enable potential problems to be predicted so that, if necessary, steps can be taken to install further controls as these industries expand.

AIR POLLUTION ADVISORY COMMITTEE

A number of amendments to the regulations were recommended, and later gazetted. Of prime importance were those by which from 1st January, 1972, new installations on scheduled premises are subject to a modified series of emission limits. These limits are more stringent than those for older installations; it is considered that with recent technological developments, control equipment now exists which when installed on the new plants is capable of meeting these limits. Further changes in the Act and regulations are envisaged for 1972, in particular the need to include automobile pollution; the redrafting of the Act with the latter in view, is well-advanced.

Much of the work of the branch is concerned with the preparation of material for submission to the Committee; the Air Pollution Advisory Committee's report for the year ended 30th June, 1971, gives details of developments in control in scheduled industries.

EMISSIONS FROM MOTOR VEHICLES

As in many major cities overseas the automobile is now an important factor in the overall pollution problem. It has been estimated that about 60 per cent of total pollution on a weight basis is derived from such sources; although this figure takes no account of the relative importance of the same weight of different pollutants, it indicates the attention necessary to this source of pollution. Existing emissions derived from the automobile will continue to rise for some time, and increasingly stringent control standards will need to be applied in the coming years.

The chemists of the branch have constructed an automatic ozone recorder using the chemiluminescence principle; this instrument is very reliable, gives instantaneous readings and records down to less than 1 p.p.h.m.

METEOROLOGICAL ASPECTS

As inversion situations usually coincide with the worst overall pollution periods, attention is now being given to the meteorology of pollution episodes in Sydney. Data from the branch's monitoring records are being related to information from the Bureau of Meteorology. In particular, experimental studies of inversion situations in conjunction with the Commonwealth Bureau of Meteorology are being planned.

URBAN PLANNING

The branch has continued its collaboration with the State Planning Authority on urban and industrial planning. Surface weather observations at Campbelltown, supplied by the Commonwealth Bureau of Meteorology, have been analysed by the branch. At present the surface wind patterns of the Greater Sydney Basin produce a convergence of air over built-up areas during times of accumulation of air pollution; the establishment of air pollution sources outside the existing perimeter of Sydney, but still within the basin, will prolong and intensify the episodes of high pollution in the basin. The planned Campbelltown development with industrial zones stretched along the floor of the Bow Bowing Creek Valley will be subject to high pollution levels if major sources are allowed there; the down-valley breeze of winter nights and mornings will also carry pollutants into the southern suburbs of Sydney.

A preliminary report on the Campbelltown situation has been supplied to the State Planning Authority. Recommendations have been made as to the types of industry which might be established without serious detriment to air quality either in that region or in Greater Sydney. Detailed information on airflow patterns and pollution dispersion rates in the region will be obtained by a a network of anemometers now being set up by the Bureau of Meteorology and by the branch.

Work is in progress on the possible impact of air pollution arising from the proposed steelworks on the shores of Jervis Bay. In view of the critical need for acceptable coastal sites for heavy industry, served by water and harbour facilities, this study is being performed in depth. Evaluation of the Jervis Bay area is complicated by the existence of a climatic division between the coastal strip subjected to the sea breeze and the landward half of the planning region with its continental climate.

MONITORING OF AIR POLLUTION

Monitoring of the air quality in New South Wales continued throughout 1971. Contaminants measured were smoke, sulphur dioxide, deposited and suspended solids, lead, copper, iron, carbon monoxide, fluorides, and oxidants. Oxidant monitoring on a continuous basis commenced in January, 1971.

To conform with international standards, metric units are now being used to report results; however to facilitate comparison with previous data, the 1971 results are presented in both British and metric units. The expression of smoke concentrations in metric units for the 24-hour samples has been carried out using the British standard curve. However, this curve and method of expressing smoke concentrations are not applicable to the continuous smoke tape monitor results, which use a two hour sampling period. Accordingly such results continue to be presented in coefficient of haze units.

SMOKE CONCENTRATION (Figure 1, tables 1 and 2)

There has been a slight overall reduction in the coefficient of haze levels in the Sydney metropolitan area; and a significant reduction in the highest daily recorded values at a number of sites. The Newcastle area daily average readings are similar to the 1970 figures, but again there is a significant reduction in the highest daily figure at two sites in the area.

Measurement of smoke concentration by means of 24-hour combined smoke and sulphur dioxide sampling apparatus is now carried out at nineteen sites in New South Wales; an increase in the number of sites will take place in 1972.

SULPHUR DIOXIDE (Figure 2, table 3)

Twenty-four-hour sulphur dioxide measurement is now carried out at twenty sites. There has been little variation in the concentration in the Sydney metropolitan area compared with the levels which were recorded during 1970. The concentration at the Newcastle East site, which for 1970 showed a 70 per cent increase over the 1969 figure, has now fallen and equals the 1969 level.

The continued reduction in concentration in the Matraville area has made it necessary to replace the continuous monitor by a more sensitive instrument.

DUST DEPOSITION (Figure 3)

The annual average dust deposition in the Sydney metropolitan area further decreased during 1971 to 8·4 tons per square mile per month. The Newcastle and Lithgow areas demonstrate a reduction in recorded levels compared with 1970 figures, but there is a slight increase of 0·7 tons per square mile in the average figure for the Wollongong area.

CARBON MONOXIDE (Tables 4, 5, and 8)

Continuous recording of carbon monoxide at a site in the centre of Sydney was continued for the second year; this site is representative of high density "stop-start" city traffic. The yearly average of 9·9 parts per million (p.p.m.) for 1971 is slightly lower than the 1970 average of 10·4; however, higher values have been recorded over short time periods, and the maximum concentration for 1-hourly, 8-hourly, and daily periods are higher in 1971 than 1970.

The 1971 percentage frequencies of carbon monoxide concentrations equal to or exceeding 20, 30, and 50 p.p.m. are lower than the 1970 figures. Monthly average concentrations followed the same pattern as in 1970; it is now apparent that the high readings in winter, and relatively low readings in summer, form a seasonal pattern. The high percentage frequency readings in December are attributed to the increased traffic density due to the public transport strike.

Comparison with overseas figures shows that the levels of carbon monoxide in Sydney are similar to those in overseas cities where it has been found necessary for stringent controls to be enforced to contain the problem.

TOTAL OXIDANTS (Tables 6, 7, and 9)

High oxidant concentrations in the Sydney metropolitan area occur most frequently when light winds with an easterly component occur. Continuous monitoring of oxidants commenced at Lidcombe in January; this site is considered representative for maximum concentrations, as oxidants forming in the inner city area collect in the Western Suburbs. One incident of high concentration occurred on 5th November, when a reading of 0·17 p.p.m. was recorded between 2 p.m. and 3 p.m.; as a result considerable damage was done to petunias at a plant nursery and elsewhere.

As with carbon monoxide, it is apparent that concentrations of oxidants in the Sydney metropolitan area are approaching those which have been recorded in cities in the U.S.A.

FLUORIDE

Monitoring of fluoride at the Kurri Kurri site continued throughout 1971. The monthly average values ranged from 0·41 $\mu gm/m^3$ to 1·33 $\mu gm/m^3$, with an annual average concentration of 0·86 $\mu gm/m^3$, expressed as hydrogen fluoride (gaseous and particulate).

FIGURE 1

SYDNEY SMOKE DENSITY

AVERAGE ANNUAL VALUES COHS 1000 LINEAR Ft

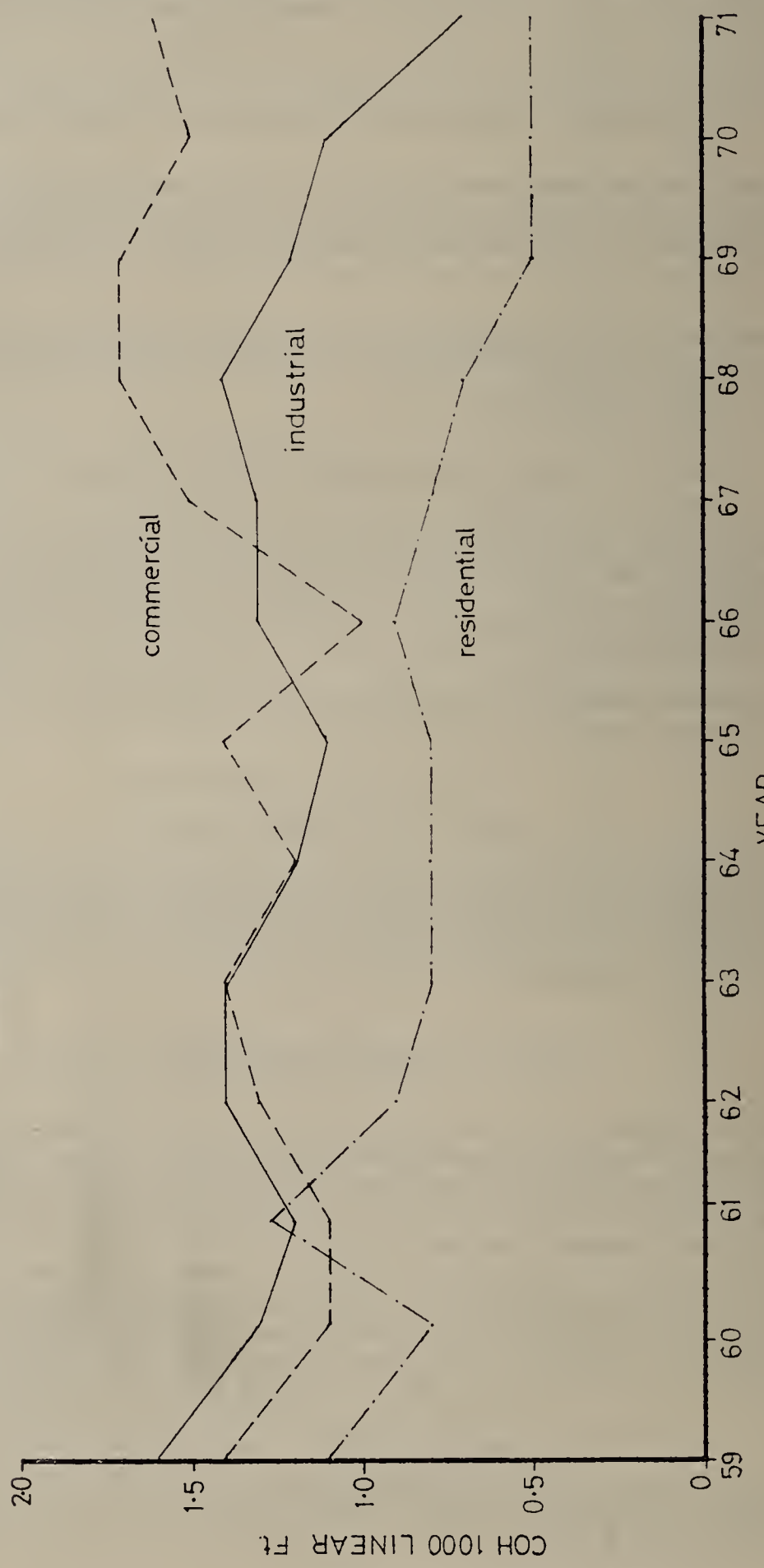

FIGURE 2

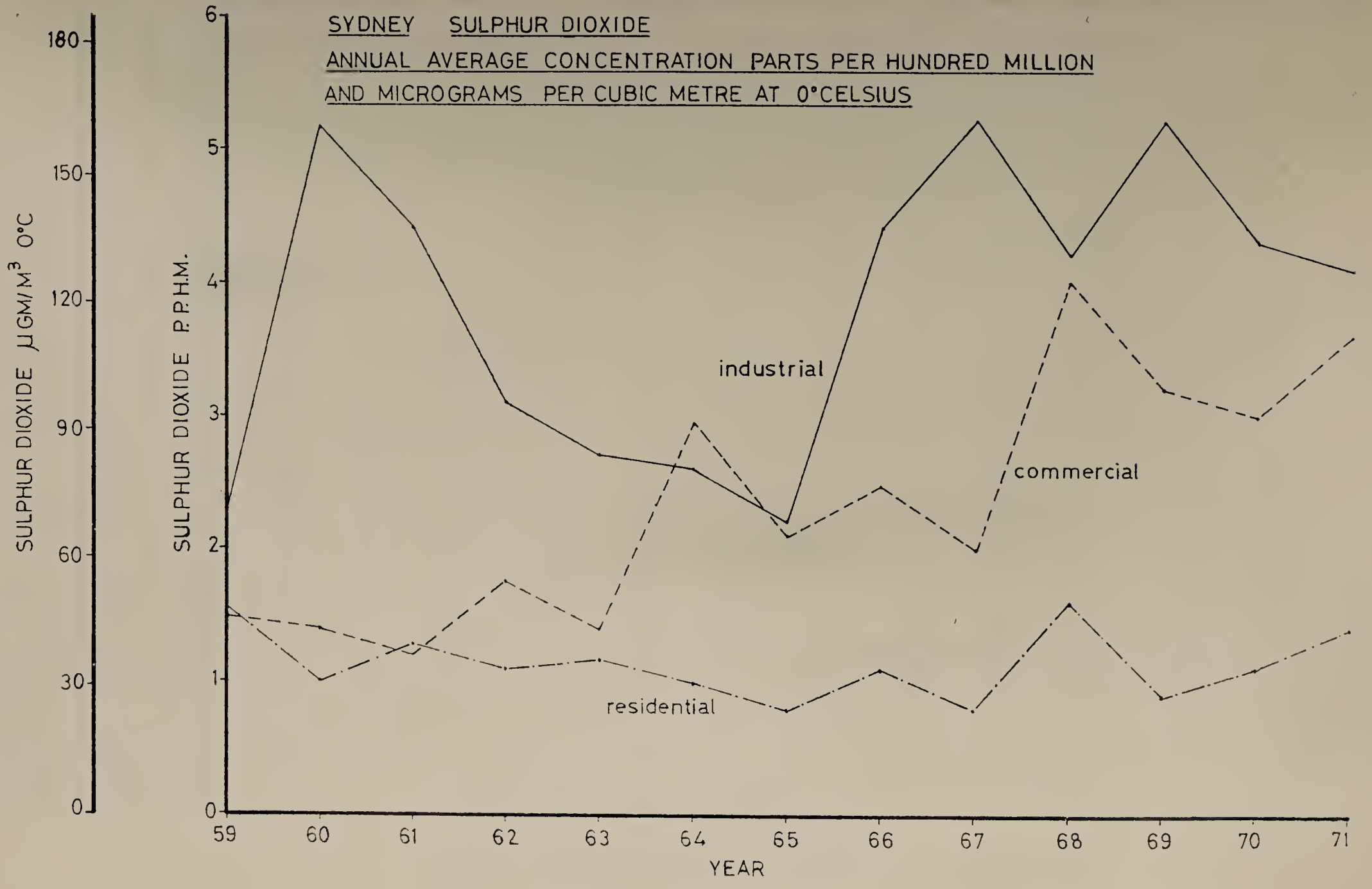
SYDNEY SULPHUR DIOXIDE
ANNUAL AVERAGE CONCENTRATION PARTS PER HUNDRED MILLION
AND MICROGRAMS PER CUBIC METRE AT 0°CELSIUS
SULPHUR DIOXIDE μGM/M³ 0°C
180
150
120
90
60
30
0
SULPHUR DIOXIDE P.P.H.M.
6
5
4
3
2
1
0
industrial
commercial
residential
59
60
61
62
63
64
65
66
67
68
69
70
71
YEAR

FIGURE 3

DEPOSIT GAUGE READINGS IN NEW SOUTH WALES CITIES

GRAMS / SQUARE METRE/MONTH

TONS/ SQUARE MILE/ MONTH

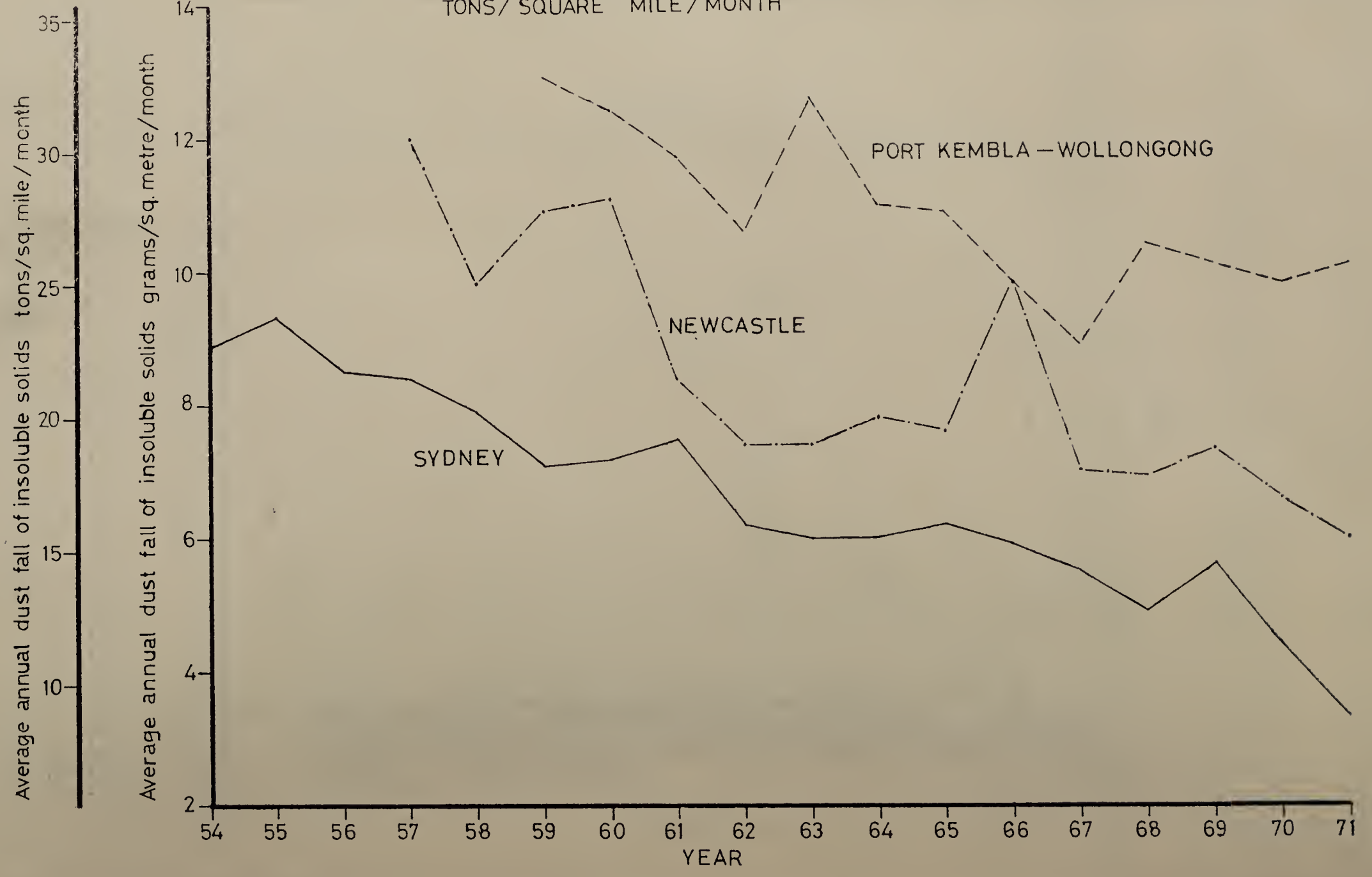

TABLE 1

CONTINUOUS SMOKE MONITOR RESULTS—1971—SMOKE DENSITIES—2 HOUR SAMPLES

COH units per 1000 *lin. ft*

Site	+	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly average 1971	Yearly average 1970
Callan Park Monitor Station	AV	0·3	0·3	0·6	0·6	0·8	1·2	1·2	0·8	0·5	0·5	0·4	0·3	0·5	0·6
	HD	0·5	0·8	1·2	1·1	2·1	3·2	2·6	2·0	1·2	1·2	1·3	0·7	..	..
	HV	1·5	2·0	4·3	3·0	3·7	8·2	4·0	3·8	3·6	2·9	2·8	2·1	..	..
Ermington Monitor Station	AV	0·3	0·4	0·4	0·5	0·5	0·7	0·8	0·6	0·3	0·4	0·3	0·2	0·4	0·5
	HD	0·7	0·7	0·8	1·0	1·1	2·1	1·4	1·2	0·8	0·8	1·1	0·5	..	..
	HV	1·8	2·1	2·2	2·2	2·5	7·0	3·6	2·1	2·6	2·1	2·3	1·9	..	..
George Street North Monitor Station ..	AV	0·5	0·6	0·6	0·8	1·1	1·4	1·7	1·2	1·0	0·7	0·7	0·5	0·9	0·8
	HD	1·0	1·3	1·3	1·3	2·3	4·0	3·1	2·4	1·5	1·3	1·7	0·8	..	..
	HV	3·9	3·8	3·8	3·8	3·8	8·8	4·8	4·3	3·6	2·9	4·0	2·4	..	..
Lidcombe Hospital Monitor Station ..	AV.	0·3	0·3	0·4	0·5	0·5	0·7	0·7	0·3	0·4	0·3	0·3	0·3	0·4	0·3
	HD.	0·7	0·5	0·6	1·0	1·3	1·7	1·6	0·7	0·9	0·7	0·9	0·6	..	..
	HV.	1·5	1·5	2·2	1·9	2·3	6·5	3·5	1·7	1·7	2·3	1·7	1·6	..	..
Prince Henry Hospital Monitor Station..	AV.	0·2	0·3	0·3	0·4	0·5	0·5	0·5	0·2	0·3	0·2	0·2	0·1	0·3	0·4
	HD.	0·6	1·0	0·9	0·8	1·3	2·1	1·6	0·5	0·6	0·8	0·5	0·3	..	..
	HV.	1·6	2·3	2·2	2·0	3·6	5·0	3·4	2·8	2·3	1·9	2·0	1·2	..	..
Prince of Wales Hospital Monitor Station.	AV.	0·6	0·3	0·4	0·5	0·8	0·9	1·0	0·9	0·5	0·4	0·3	0·2	0·6	0·5
	HD.	1·9	0·9	1·2	1·2	2·0	2·8	2·2	1·9	1·2	0·7	0·7	0·6	..	..
	HV.	2·7	1·9	3·7	2·9	3·9	5·9	4·0	4·1	4·0	2·3	2·3	1·6	..	..
Queen Victoria Building Monitor Station	AV.	0·7	0·7	0·5	0·6	1·1	0·9	1·1	1·0	1·1	1·0	0·9	0·9	0·9	1·0
	HD.	0·9	1·1	0·9	1·1	1·9	1·9	1·8	1·7	1·6	1·7	1·9	2·9	..	..
	HV.	1·4	2·5	2·3	2·6	4·2	4·6	3·5	4·1	4·0	3·7	4·2	4·1	..	..

+AV—Monthly Average—2-hour samples.
HD.—Highest daily average for month.
HV.—Highest two-hourly value for month.

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TABLE 1

CONTINUOUS SMOKE MONITOR RESULTS—1971—SMOKE DENSITIES—2-HOUR SAMPLES

COH units per 1000 *lin. ft—continued*

Site	+	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly average 1971	Yearly average 1970
Rydalmere Monitor Station	AV.	0·3	0·5	0·5	0·5	0·7	1·0	1·0	0·7	0·5	0·5	0·4	0·3	0·6	0·5
	HD.	0·9	0·8	0·9	0·9	1·7	2·5	1·9	1·5	1·0	1·0	1·2	0·6	..	..
	HV.	2·1	2·3	2·2	3·3	3·3	8·2	3·4	3·4	3·3	2·7	2·5	2·4	..	..
State Office Block Monitor Station ..	AV.	0·3	0·2	0·3	0·6	0·5	0·7	0·9	0·6	0·5	0·4	0·4	0·2	0·5	0·4
	HD.	0·6	0·5	1·0	0·9	1·2	1·2	2·1	1·4	0·9	0·7	1·0	0·5	..	..
	HV.	2·1	1·5	4·0	2·7	4·2	4·2	3·1	2·7	3·7	1·7	3·2	1·5	..	..
Sutherland Monitor Station	AV.	0·2	0·1	0·1	0·2	0·2	0·3	0·3	0·4	0·2	0·2	0·2	0·2	0·2	0·3
	HD.	0·3	0·2	0·3	0·5	0·6	0·8	0·9	0·6	0·8	0·4	0·5	0·4	..	..
	HV.	0·9	0·8	1·1	1·1	1·5	2·3	2·2	2·4	1·3	0·9	1·5	1·4	..	..
Newcastle (Market Street)	AV.	0·3	0·2	0·2	0·4	..	..	..	..	..	..	0·4	0·3	..	0·6
	HD.	0·9	1·1	0·9	1·0	..	..	..	..	..	..	1·0	0·7	..	..
	HV.	2·4	2·0	2·0	2·8	..	..	..	..	..	..	2·7	2·3	..	..
Port Kembla (Fire Station)	AV.	0·4	0·3	0·6	0·5	0·4	0·4	0·5	0·6	0·7	0·6	0·6	0·6	0·5	0·5
	HD.	2·2	1·0	1·2	1·5	1·1	1·2	1·5	1·4	1·8	1·7	2·3	2·1	..	..
	HV.	5·0	1·7	3·9	5·4	2·4	4·3	3·4	4·8	5·6	5·9	7·0	8·2	..	..
Port Kembla (Sub Station)	AV.	..	..	..	..	..	..	..	0·3	0·5	0·7	0·7	0·6	..	0·5
	HD.	..	..	..	..	..	..	..	0·5	1·2	1·8	2·2	2·3	..	..
	HV.	..	..	..	..	..	..	..	1·7	2·8	7·8	8·7	3·7	..	..
Wollongong City Council	AV.	0·2	0·2	0·3	0·2	0·3	0·4	0·5	0·4	0·4	0·3	0·4	0·4	0·3	0·3
	HD.	0·5	0·6	0·6	0·6	1·1	1·1	1·2	0·8	1·0	0·8	1·2	0·8	..	..
	HV.	1·2	2·0	2·1	1·1	2·9	3·1	3·0	2·9	2·1	1·9	2·8	1·5	..	..
Lithgow	AV.	0·9	0·8	1·1	1·4	2·1	2·3	2·9	2·2	1·9	1·6	1·2	0·8	1·6	1·5
	HD.	2·0	1·9	3·0	3·8	4·5	4·0	4·9	3·9	4·1	3·1	2·6	2·7	..	..
	HV.	4·7	4·4	5·9	7·2	8·5	8·2	8·9	7·4	8·0	5·9	5·7	6·1	..	..

+AV.—Monthly Average—2-Hour Samples.
HD.—Highest daily average for month.
HV.—Highest two-hourly value for month.

TABLE 2

SMOKE CONCENTRATIONS—24-HOUR SAMPLES—1971

Site		Jan.		Feb		Mar.		Apr.		May		June		July		Aug.		Sept.		Oct.		Nov.		Dec.		Yearly average 1971		Yearly average 1970	
		M	C	M	C	M	C	M	C	M	C	M	C	M	C	M	C	M	C	M	C	M	C	M	C	M	C	M	C
Botany Town Hall	AV	13	0·6	14	0·6	28	0·7	22	0·5	41	1·0	43	1·0	33	0·8	34	0·8	38	0·9	40	0·6	29	0·6	26	0·7	30	0·8	..	0·6
	HD	35	1·8	33	1·4	79	1·8	77	1·7	111	2·5	169	3·5	69	1·7	70	1·3	99	1·8	96	1·7	85	1·5	55	1·2	..	..	..	..
Callan Park Monitor Station ..	AV	..	..	..	..	..	..	8·5	0·3	20	0·6	27	0·8	28	0·8	15	0·5	14	0·5	10	0·3	9·0	0·4	9·0	0·3	16	0·5	..	..
	HD	..	..	..	..	..	..	25	0·9	60	1·4	89	2·1	76	1·7	60	1·5	50	1·2	32	0·9	23	1·0	41	1·0	..	..	..	..
George Street North Monitor Station	AV	..	..	..	..	..	..	..	..	..	..	37	1·1	49	1·2	42	1·0	32	0·9	18	0·6	16	0·5	10	0·4	29	0·8	..	..
	HD	..	..	..	..	..	..	..	..	..	..	99	2·2	114	2·7	64	2·0	84	1·4	45	1·3	45	1·2	19	0·6	..	..	..	..
Lidcombe Hospital Monitor Station	AV	4·2	0·2	5·3	0·2	7·0	0·2	7·4	0·2	8·0	..	16	0·3	23	0·4	12	0·3	5·8	0·3	3·3	0·2	3·7	0·1	3·5	0·1	9·0	0·2	..	0·3
	HD	10	0·3	9·0	0·3	14	0·4	16	0·5	19	..	39	0·7	42	0·9	23	0·5	17	0·5	8·0	0·5	8·0	0·2	13	0·4	..	..	..	..
North Sydney Council	AV	..	..	..	..	..	..	..	..	24	0·6	36	0·7	32	0·7	27	0·6	18	0·4	13	0·3	13	0·3	8·5	0·2	22	0·5	..	0·5
	HD	..	..	..	..	..	..	..	..	47	1·0	83	1·0	64	1·1	52	0·9	29	0·6	38	0·6	31	0·7	25	0·5	..	..	..	..
Paddington Town Hall	AV	11	0·3	6·4	0·4	14	0·5	15	0·7	22	0·6	24	0·7	24	1·1	14	0·7	5·8	0·3	3·8	0·2	5·3	0·2	6·4	0·1	13	0·5	..	0·6
	HD	33	0·8	26	0·9	34	0·9	28	2·5	46	1·6	49	1·5	62	1·7	24	1·1	18	0·5	8·0	0·4	18	0·7	23	0·4	..	..	..	..
Prince Alfred Park	AV	31	0·5	24	0·6	26	0·8	41	1·0	38	1·2	52	1·3	55	1·3	36	1·1	26	0·8	18	0·7	13	0·5	9·0	0·3	31	0·9	..	1·0
	HD	108	1·0	73	1·9	45	1·2	76	2·0	79	1·8	123	2·6	89	2·3	125	2·0	55	1·7	38	1·2	27	0·9	29	0·7	..	..	..	..
Prince Henry Hospital Monitor Station.	AV	..	..	..	..	..	..	..	..	16	0·6	19	0·6	26	0·7	26	0·7	14	0·5	11	0·4	10	0·3	4·0	0·2	15	0·5	..	..
	HD	..	..	..	..	..	..	..	..	48	1·4	83	1·9	88	1·8	71	1·4	37	1·1	31	0·8	56	1·2	25	0·6	..	..	..	..
Prince of Wales Hospital Monitor Station.	AV	..	..	..	..	..	..	..	..	23	0·6	36	0·8	47	0·9	37	0·8	16	0·5	11	0·3	12	0·4	5·3	0·2	23	0·6	..	..
	HD	..	..	..	..	..	..	..	..	73	1·5	134	2·0	113	1·9	98	1·6	52	1·1	51	1·0	53	1·2	30	0·7	..	..	..	..
Queen Victoria Building	AV	45	0·9	36	1·0	53	1·5	86	2·1	94	2·3	84	1·9	103	2·7	82	1·9	50	1·6	52	1·4	27	0·9	26	0·4	61	1·6	..	1·5
	HD	124	1·7	71	1·8	134	6·2	239	3·3	165	3·1	162	4·8	218	6·2	248	3·8	147	3·5	245	4·3	48	3·3	80	0·7	..	..	..	..
Redfern Town Hall	AV	7·4	0·3	9·0	0·4	..	..	..	..	41	1·1	61	1·6	68	1·3	125	0·9	108	0·6	57	0·5	8·0	0·4	8·0	0·3	49	0·7	..	1·1
	HD	30	1·2	30	1·3	..	..	..	..	97	2·7	176	4·8	214	2·4	190	1·7	190	1·8	135	0·8	15	1·0	13	0·7	..	..	..	..
Rydalmere Monitor Station	AV	..	..	16	0·4	48	0·4	55	0·3	75	0·4	80	0·5	103	0·5	66	0·6	52	0·4	54	0·4	50	0·4	56	0·4	60	0·4	..	..
	HD	..	..	27	0·7	71	0·6	78	0·7	123	0·8	172	1·2	151	0·8	124	1·1	98	0·9	114	0·8	110	1·0	86	0·6	..	..	..	..
State Office Block Monitor Station ..	AV	..	..	8·5	0·3	13	0·3	20	0·4	22	0·5	28	0·6	32	0·7	19	0·5	15	0·4	11	0·3	9·0	0·2	5·8	0·2	16	0·4	..	..
	HD	..	..	19	1·1	38	0·7	37	0·7	71	1·0	62	1·1	57	1·1	41	1·0	31	0·7	32	0·4	25	0·5	14	0·4	..	..	..	..
City Hall Newcastle	AV	19	0·4	11	0·3	13	0·3	31	0·7	78	1·4	82	1·4	82	1·9	81	1·6	75	1·5	24	0·6	9·0	0·4	5·1	0·2	43	0·9	..	0·9
	HD	41	1·0	28	0·8	58	1·4	94	1·8	185	3·1	221	3·2	282	4·9	153	2·8	153	2·6	65	1·5	38	0·9	13	0·6	..	..	..	..
Mayfield East Newcastle	AV	32	0·8	52	1·0	35	0·7	30	0·7	57	1·0	46	0·9	57	1·2	56	1·0	51	1·0	48	1·1	55	0·9	67	0·9	49	0·9	..	1·0
	HD	111	2·0	105	1·8	128	2·1	99	1·9	128	1·9	100	1·5	168	2·7	137	2·2	95	1·9	92	1·7	111	1·7	182	2·0	..	..	..	..
Newcastle East*	AV	27	0·6	7·4	0·3	13	0·4	31	0·8	66	1·5	44	1·0	52	1·4	52	1·2	49	1·2	19	0·6	..	..	5·3	0·3	33	0·8	..	1·1
	HD	61	1·7	23	0·8	41	1·1	128	2·6	167	3·2	191	3·2	162	3·5	106	2·3	102	2·2	53	1·2	..	..	10	0·6	..	..	..	..
North Stockton Newcastle	AV	8·5	0·2	5·8	0·1	10	0·3	24	0·5	28	0·6	40	0·8	36	0·8	..	..	30	0·6	16	0·4	17	0·4	4·2	0·1	20	0·4	..	..
	HD	24	0·5	19	0·4	28	0·6	118	1·8	69	1·3	98	2·0	77	2·0	..	..	79	1·8	35	1·1	48	1·3	13	0·4	..	..	..	..
West Cessnock	AV	2·4	0·2	6·4	0·3	4·2	0·2	12	0·3	34	0·7	51	1·3	65	1·1	35	0·7	34	0·7	14	0·3	14	0·3	8·0	0·2	23	0·5	..	0·6
	HD	6·4	0·3	18	0·5	9·0	0·4	28	0·7	87	1·5	117	2·7	114	1·8	77	1·5	63	1·3	37	0·8	45	0·7	15	0·4	..	..	..	..
Neath	AV	13	0·3	14	0·3	17	0·4	15	0·4	27	0·6	32	0·8	14	0·6	..	..	..	..	26	0·6	16	0·4	9·6	0·3	18	0·5	..	0·5
	HD	36	0·9	36	0·8	101	2·0	40	0·9	72	1·2	78	1·9	39	1·5	..	..	..	..	57	1·3	38	0·8	19	0·5	..	..	..	..

* During the year this site was moved from Bolton Street, Newcastle East to a nearby site in Watt Street.

AV.—Monthly average concentration for 24-hour samples. HD.—Highest 24-hour concentration recorded during month. M.—Results expressed in micrograms/cubic metre at 0°C. C.—Results expressed in COH units per 1,000 lin. ft.

TABLE 3
SULPHUR DIOXIDE CONCENTRATIONS—24-HOUR SAMPLES

Site		Jan.		Feb.		Mar.		Apr.		May		June		July		Aug.		Sept.		Oct.		Nov.		Dec.		Yearly Average 1971		Yearly Average 1970	
		M	P	M	P	M	P	M	P	M	P	M	P	M	P	M	P	M	P	M	P	M	P	M	P	M	P	M	P
Botany Town Hall	AV	16	0·5	20	0·6	20	0·6	22	0·7	25	0·8	38	1·2	30	1·0	26	0·8	32	1·1	27	0·9	17	0·6	22	0·7	24	0·8	37	1·2
	HD	31	1·0	37	1·2	52	1·7	38	1·2	99	3·2	100	3·2	64	2·1	40	1·3	71	2·3	41	1·3	32	1·1	117	3·8	..	..	..	..
Callan Park Monitor Station ..	AV	..	..	..	..	..	..	29	0·9	76	2·5	84	2·7	56	1·8	52	1·7	47	1·5	54	1·8	32	1·0	22	0·7	50	1·6	..	..
	HD	..	..	..	..	..	..	68	2·2	286	9·3	316	10·3	96	3·1	86	2·8	90	2·9	94	3·1	48	1·6	46	1·5	..	..	..	..
George Street North Monitor Station	AV	..	..	..	..	..	..	..	..	..	..	55	1·8	63	2·1	58	1·9	45	1·5	59	1·9	45	1·5	51	1·7	54	1·8	..	..
	HD	..	..	..	..	..	..	..	..	..	..	91	3·0	101	3·3	95	3·1	69	2·2	152	5·0	107	3·5	86	2·8	..	..	..	..
Lidcombe Hospital Monitor Station	AV	25	0·8	22	0·7	23	0·8	22	0·7	24	0·8	33	1·1	38	1·2	28	0·9	25	0·8	16	0·5	23	0·8	24	0·8	25	0·8	25	0·8
	HD	43	1·4	43	1·4	34	1·1	43	1·4	52	1·7	80	2·6	61	2·0	49	1·6	40	1·3	25	0·8	43	1·4	40	1·3	..	..	..	..
North Sydney Council	AV	..	..	..	..	..	..	..	..	82	2·7	58	1·9	30	1·0	35	1·1	46	1·5	35	1·1	25	0·8	32	1·0	43	1·4	34	1·1
	HD	..	..	..	..	..	..	..	..	143	4·7	98	3·2	77	2·5	74	2·4	66	2·1	58	1·9	51	1·7	47	1·5	..	..	..	..
Paddington Town Hall	AV	185	6·0	155	5·1	153	5·0	138	4·5	209	6·8	182	5·9	103	3·4	117	3·8	95	3·1	120	3·9	124	4·1	126	4·1	142	4·6	141	4·6
	HD	278	9	338	11	224	7	187	6	368	12	338	11	184	6	153	5	153	5	184	6	399	13	215	7	..	..	..	..
Prince Alfred Park	AV	71	2·3	63	2·1	75	2·4	94	3·1	163	5·3	93	3·0	84	2·7	81	2·6	74	2·4	90	2·9	63	2·0	57	1·8	84	2·7	83	2·7
	HD	92	3	92	3	153	5	153	5	307	10	123	4	123	4	153	5	123	4	153	5	92	3	92	3	..	..	..	..
Prince Henry Hospital Monitor Station	AV	..	..	..	..	..	..	..	..	124	4·0	92	3·0	103	3·3	86	2·8	78	2·5	64	2·1	58	1·9	37	1·2	80	2·6	..	..
	HD	..	..	..	..	..	..	..	..	276	9·0	170	5·5	220	7·2	236	7·7	279	9·1	160	5·2	167	5·4	71	2·3	..	..	..	..
Prince of Wales Hospital Monitor Station.	AV	..	..	..	..	..	..	..	..	99	3·2	87	2·8	80	2·6	75	2·4	72	2·4	70	2·3	61	2·0	59	1·9	76	2·4	..	..
	HD	..	..	..	..	..	..	..	..	151	4·9	164	5·3	139	4·5	114	3·7	118	3·8	130	4·2	113	3·7	138	4·5	..	..	..	..
Queen Victoria Building	AV	95	3·1	80	2·6	107	3·5	114	3·7	196	6·4	110	3·6	110	3·6	104	3·4	95	3·1	141	4·6	117	3·8	117	3·8	114	3·7	92	3·0
	HD	193	6·3	187	6·1	270	8·8	319	10·4	423	13·8	282	9·2	187	6·1	157	5·1	147	4·8	227	7·4	267	8·7	184	6·0	..	..	..	..
Redfern Town Hall	AV	107	3·5	119	3·9	126	4·1	..	..	138	4·5	233	7·6	115	3·7	95	3·1	101	3·3	124	4·0	128	4·2	96	3·1	125	4·1	132	4·3
	HD	172	5·6	166	5·4	178	5·8	..	..	239	7·8	390	12·7	197	6·4	218	7·1	150	4·9	184	6·0	236	7.7	163	5·3	..	..	..	..
Rydalmere Monitor Station	AV	..	..	28	0·9	33	1·1	45	1·5	73	2·4	78	2·5	46	1·5	44	1·4	45	1·5	50	1·6	37	1·2	47	1·5	48	1·6	..	..
	HD	..	..	107	3·5	60	2·0	113	3·7	383	12·5	294	9·6	72	2·4	64	2·1	69	2·2	104	3·4	62	2·0	308	10·0	..	..	..	..
State Office Block Monitor Station ..	AV	..	..	12	0·4	31	1·0	43	1·4	41	1·3	43	1·4	70	2·3	49	1·6	38	1·2	45	1·5	31	1·0	25	0·8	39	1·3	..	..
	HD	..	..	46	1·5	76	2·5	92	3·0	151	4·9	92	3·0	160	5·2	113	3·7	71	2·3	73	2·4	68	2·2	53	1·7	..	..	..	..
City Hall Newcastle	AV	15	0·5	15	0·5	12	0·4	26	0·9	54	1·7	55	1·8	55	1·8	56	2·0	59	1·9	25	0·8	14	0·5	0	0	32	1·1	43	1·4
	HD	29	·94	25	·82	25	·80	58	1·88	113	3·68	139	4·53	121	3·95	115	3·73	106	3·44	48	1·58	43	1·39	2·7	·09	..	..	..	..
Mayfield East Newcastle	AV	23	0·8	19	0·6	22	0·7	25	0·8	36	1·2	34	1·1	39	1·3	39	1·3	26	0·8	1·7	0·1	4·0	0·1	17	0·5	24	0·8	64	2·1
	HD	56	1·82	38	1·25	46	1·49	47	1·51	53	1·73	59	1·93	54	1·75	79	2·57	68	2·20	19	0·63	40	1·31	48	1·58	..	..	..	..
Newcastle East*	AV	82	2·6	48	1·6	50	1·6	67	2·2	76	2·5	77	2·5	67	2·2	68	2·2	67	2·1	51	1·7	52	1·7	23	0·7	61	2·0	104	3·4
	HD	108	3·51	67	2·19	66	2·13	105	3·41	129	4·19	135	4·38	104	3·38	92	2·98	100	3·25	113	3·66	101	3·3	61	1·98	..	..	..	..
North Stockton Newcastle	AV	7·9	0·2	1·9	0·1	1·1	0·0	8·0	0·3	6·5	0·2	16	0·5	9·9	0·3	..	..	3·1	0·1	5·6	0·2	2·0	0·1	5·2	0·2	6·1	0·2	..	..
	HD	33	1·1	5·5	0·2	7·1	0·2	31	1·0	20	0·7	73	2·4	35	1·2	..	..	16	0·5	47	1·5	9·9	0·3	34	1·1	..	..	..	..
West Cessnock	AV	61	2·0	41	1·3	27	0·9	33	1·1	23	0·8	13	0·4	15	0·5	14	0·4	15	0·5	14	0·5	11	0·3	11	0·4	23	0·7	28	0·9
	HD	119	3·9	66	2·1	49	1·6	41	1·3	39	1·3	32	1·0	28	0·9	18	0·6	24	0·8	20	0·7	16	0·5	15	0·5	..	..	..	..
Wollongong (Fire Station)	AV	92	3·0	68	2·2	86	2·8	51	1·7	41	1·3	48	1·6	38	1·2	42	1·4	78	2·5	74	2·4	95	3·1	126	4·1	70	2·3	89	2·9
	HD	279	9·1	568	18·5	276	9·0	144	4.7	101	3·3	215	7·0	344	11·2	270	8·8	393	12·8	261	8·5	301	9·8	568	18·5	..	..	..	..
Neath	AV	32	1·0	24	0·8	14	0·5	13	0·4	9·8	0·3	11	0·3	17	0·6	..	..	..	..	9·9	0·3	8·4	0·3	7·7	0·2	15	0·5	25	0·8
	HD	71	2·3	36	1·2	34	1·1	18	0·6	15	0·5	26	0·8	44	1·4	..	..	..	..	27	0·9	13	0·4	11	0·3	..	..	..	..

* During the year this site was moved from Bolton Street, Newcastle East, to a nearby site in Watt Street.

AV.—Monthly average conecntration for 24-hour samples. HD.—Highest 24-hour concentration recorded during month. M.—Results expressed in micrograms/cubic metre at 0;C. P.—Results expressed in parts per hundred million.

TABLE 4—CARBON MONOXIDE CONCENTRATIONS, 1971—SYDNEY, QUEEN VICTORIA BUILDING—MAXIMUM CONCENTRATIONS

Parts per million (p.p.m.)

Sampling Period	Maximum CO Concentrations 1970*	Maximum CO Concentrations 1971
1 hour	66	72
8 hours	40	49
1 day	21	32·5
1 month	13·4	13·3†
12 months	10·4	9·9

* Excluding the Captain Cook Anniversary Celebrations.

† Excluding July.

TABLE 5—MONTHLY AVERAGES AND PER CENT FREQUENCIES OF CARBON MONOXIDE CONCENTRATIONS

Month	Per cent Sampling Time	Monthly Average p.p.m.	Percentage Frequencies of CO concentrations		
			Per cent Frequency ⩾ 20 p.p.m.	Per cent Frequency ⩾ 30 p.p.m.	Per cent Frequency ⩾ 50 p.p.m.
January	99	8·1	1·6	0·0	0·0
February	84	8·2	2·1	0·0	0·0
March	100	7·3	0·0	0·0	0·0
April	92	9·0	1·8	0·0	0·0
May	88	10·1	7·4	0·0	0·0
June	94	13·3	13·4	4·2	0·3
July	60	17·2	27·0	7·5	0·0
August	100	12·5	12·1	1·2	0·0
September	91	10·0	2·8	0·0	0·0
October	100	9·1	0·9	0·0	0·0
November	100	8·4	2·9	0·0	0·0
December	100	8·9	7·5	2·3	0·0
Annual Average	92	9·9	6·0	1·1	0·03

Annual averages are weighted according to per cent sampling time in each month.

TABLE 6—TOTAL OXIDANT CONCENTRATIONS, 1971—SYDNEY, LIDCOMBE—MAXIMUM CONCENTRATIONS

Parts per million (p.p.m.)

Sampling Period	Maximum Total Oxidant Concentrations
5 minutes	·21
1 hour	·17
8 hours	·10
1 day	·06
1 month	·03
12 months	·015

TABLE 7—MONTHLY AVERAGES AND PER CENT FREQUENCIES OF TOTAL OXIDANT CONCENTRATIONS

Month	Per cent Sampling Time	Monthly Average p.p.m.	Per cent of hours with concentrations		
			⩾ 0·05 p.p.m.	⩾ 0·10 p.p.m.	⩾ 0·15 p.p.m.
January	14	·02	2·9	0·0	0·0
February	42	·02	4·6	0·4	0·0
March	89	·02	4·2	0·0	0·0
April	100	·02	4·4	0·0	0·0
May	100	·015	0·3	0·0	0·0
June	99	·005	0·0	0·0	0·0
July	93	·005	0·3	0·0	0·0
August	62	·01	1·3	0·0	0·0
September	94	·02	9·6	0·4	0·0
October	82	·015	3·2	0·0	0·0
November	92	.03	10·5	0·9	0·3
December	71	·02	8·1	0·6	0·0
Annual Average	79	·015	4·1	0·2	0·0

Annual averages are weighted according to per cent sampling time in each month.

TABLE 8—CARBON MONOXIDE AND SULPHUR DIOXIDE COMPARISON WITH OVERSEAS CITIES—MAXIMUM CONCENTRATIONS

Pollutant	Site	Maximum 8-hourly Average	Maximum Daily Average	Maximum Monthly Average	Maximum Yearly Average	Period of Date
Carbon Monoxide (Parts per million)	Chicago	39	33	19	14	1962–1967
	San Francisco	17	14	7	5	1962–1967
	Los Angeles	32	26	15	11	1962–1967
	Osaka*	N.A.	14	8	7	1968
	Paris	N.A.	N.A.	N.A.	25	1966
	Sydney	49	32	13	110	1970–1971

* Site located at Environmental Pollution Control Centre, Osaka City.

N.A. Results not available.

TABLE 9—TOTAL OXIDANT COMPARISON WITH UNITED STATES CITIES

City	Total Days of Available Data	Per cent of Total Days with Maximum Hourly Oxidant Concentrations		Maximum Hourly Average	Peak Concentration	Period of Data
		⩾ 0·05 p.p.m	⩾ 0·15 p.mp..			
Los Angeles	730	74·0	30·1	0·58	0·65	1964–67
San Francisco ..	647	28·6	0·9	0·18	0·22	1964–67
Denver	285	79·3	4·9	0·25	0·31	1964–67
Chicago	530	50·8	0·0	0·13	0·19	1964–67
Sydney (Lidcombe) ..	296	21·3	0·4	0·17	0·21	1971

WATER POLLUTION CONTROL BRANCH

Principal Engineer: Mr D. D. Moore, B.Sc., A.S.T.C.

The Water Pollution Control Branch was officially constituted in August, 1971, when the senior engineering and chemical positions were filled. Prior to that time the Branch existed in embryonic form only.

During the first half of the year a great deal of preparative work was done on draft regulations under the Act, and the Branch secured the services of P. W. S. Ryan, formerly Associate Professor of Public Health Engineering at the University of New South Wales, to assist in this work.

The main functions of the Branch are the implementation of the Clean Waters Act, 1970, and the monitoring of the natural waters of New South Wales. The Clean Waters Act was drawn up to provide a mechanism for unifying control of water pollution by providing a single overriding statute which could be applied to all natural waters, including surface waters, underground waters and the sea (within the territorial limits of the State).

The Act provides for a system of classification of waters, and for the formulation of standards appropriate to each classification. When waters have been classified all drains discharging into the waters must be licensed, and conditions may be imposed on permitted discharges so as to achieve the objectives of the Act i.e. the prevention, reduction and mitigation of pollution. In more precise terms, the Act aims to maintain or upgrade the condition of natural waters so as to achieve standards of quality consistent with use for domestic, industrial, agricultural and pastoral water supplies, for the protection and propagation of fish and wildlife, and for recreational and other permitted uses.

Whilst all executive authority under the Act is vested in the Under Secretary, Department of Health, the Act provides for the establishment of a Clean Waters Advisory Committee to advise the Under Secretary and to make recommendations with respect to certain matters delineated in the Act.

The Clean Waters Advisory Committee, under the chairmanship of the Director General of Public Health, was constituted during 1971, and held a number of meetings to discuss the content and format of the draft Regulations. The Committee's detailed consideration of the draft Regulations prepared by the Branch led to a number of recommendations on changes which will be incorporated in the Regulations. Two subcommittees were also set up to consider a number of technical matters arising from the draft Regulations.

The Branch consists of an inter-disciplinary team of engineers, chemists, inspectors and technical officers with an establishment strength of eighteen. In addition to these officers located at George Street North, an additional Microbiologist and Technical Officer were appointed to the Division of Analytical Laboratories to undertake the Branch's microbiological work, and an aquatic biologist was appointed to State Fisheries to provide assistance on fisheries aspects of pollution control.

WATER QUALITY SURVEYS (SYDNEY ESTUARIES)

Between August and December, 1971, the Branch initiated an extensive programme of water quality evaluation in the Sydney Estuaries, and set up 322 monitoring stations at which measurements are being made. The waterways included in this programme are Sydney Harbour, Parramatta River, Lane Cove River, Middle Harbour, Pittwater, Brisbane Waters, Hawkesbury River, Georges River, Woronora River, Mill Creek, Salt Pan Creek, Cabramatta Creek, Prospect Creek, Cooks River, Alexandra Canal and Botany Bay.

At designated principal stations, *in situ* measurements of dissolved oxygen, temperature and salinity are carried out and samples are returned to the laboratory for the pH, suspended solids, turbidity, biochemical oxygen demand and E. Coli determination. At the remaining stations the *in situ* measurements only are carried out.

The programme is continuing with a view to establishing seasonal variations in quality but it is already abundantly evident that a number of areas suffer significant degradation. The results obtained in these surveys have formed the basis of a special Branch report.

As an example of the extent of the work being executed in the Sydney estuaries, monitoring station maps for Sydney Harbour-Parramatta River (fig. 1), Georges River (fig. 2), Lane Cove River (fig. 3) and Cooks River (fig. 4) are shown together with the variation in dissolved oxygen measured on different occasions figs 1A-4A.

Tables 1–4 present some of the data collected at the principal stations in these waterways.

FIELD INVESTIGATIONS OF DISCHARGES

Fifty-two factories were inspected to determine the treatment being carried out on waste waters. Some inspections were undertaken as a follow up to complaints of pollution whilst others were initiated by Branch officers following visual observations made during routine water quality surveys or inspections of drains. Particular attention is being given to factories situated along the Parramatta River at Rhodes, Duck Creek at Silverwater, Homebush Bay, Alexandra Canal and Salt Pan Creek at Revesby. As well as these industrial premises, eight garbage depots, which are sources of pollution, have been inspected.

A programme of monitoring seventy-three drains, creeks, stormwater channels and other water inlets to the main river systems in the metropolitan area has been initiated to determine the pollution load contributed by these sources. Measurements of quality and volumetric discharge in all of these drains are proceeding.

Evidence obtained to date suggests that about one-third of the 500 industrial premises suspected of causing pollution in the Sydney estuaries will be subject to the licensing provisions of the Clean Waters Act when the Act comes into effect.

LABORATORY ACTIVITIES

The Branch's chemical laboratory has been engaged in four main areas of activity:

(1) Setting up the laboratory and commissioning a wide range of instruments and apparatus including an atomic absorption spectrophotometer, two gas chromatographs, an automated spectrophotometric analyser, a single and a double-beam U.V. visible spectrophotometer, an automatic titrator and other equipment.

(2) Analysis of waters, wastewaters, sediments and marine organisms. In the 5 months from August to 31st December, 1,200 analytical determinations were made on 300 samples taken from the Sydney estuaries and 255 determinations were made on 51 samples of trade effluents. The field work associated with the water quality surveys is largely the responsibility of the laboratory staff.

(3) Special investigations:

(a) the determination of mercury levels in oysters from the five major oyster producing areas of New South Wales. The determinations were made using an atomic absorption spectrophotometer in flameless mode. Samples from Georges River, Wallis Lake, Port Stephens, Hawkesbury River and Manning River all showed concentrations well below the allowable limits. The geometric mean concentration for Georges River for example was 0·0099 p.p.m. compared with the WHO standard of 0·5 p.p.m.;

(b) the determination of heavy metal concentrations in certain estuarine waters using atomic absorption spectroscopy;

(c) the identification of oil-dispersants in water by gas-liquid chromatography.

(4) developmental work on methods and procedures for examination of waters and wastewaters. The importance of estuarine waters in New South Wales necessitates the modification of some standard methods because of the interference effects associated with waters of varying salinity, and substantial amount of work has been done in this direction.

WATER QUALITY SURVEYS—SYDNEY ESTUARIES

Table 1—Georges River

Station description	Kilometres from entrance	Survey 7.9.71 Temperature °C	Salinity per mill	Dissolved Oxygen per cent saturation	pH	B.O.D. mg/litre	Suspended solids mg/litre	E. coli per 100 ml	Survey 14.10.71 Temperature °C	Salinity per mill	Dissolved Oxygen per cent saturation	pH	B.O.D. mg/litre	Suspended Solids mg/litre	E. coli per 100 ml	Survey 30.11.71 Temperature °C	Salinity per mill	Dissolved Oxygen per cent saturation	pH	B.O.D. mg/litre	Suspended solids mg/litre	E. coli per 100 ml
Dolls Point	0	15·4	34·8	97	8·2	1·4	3·4	..	18·8	34·9	80	8·2	1·8	2·4	0	19·6	35·3	100	8·2	3·6	1·0	0
Oven Reach—Lugarno Ferry	12·1	15·0	31·8	99	8·2	1·3	8·2	..	19·7	31·5	83	8·1	2·1	2·0	0	21·5	34·1	86	8·1	2·8	6·0	16
Little Salt Pan Creek	17·8	14·9	28·2	97	8·1	1·4	5·8	..	19·7	27·1	83	7·8	1·8	2·6	0	22·1	31·7	79	7·9	2·0	8·0	28
East Hills	24·2	14·8	21·1	85	7·7	1·3	8·2	..	19·8	20·9	68	7·6	1·3	2·0	44	22·5	26·6	76	7·7	1·6	2·0	84
Milperra	30·9	14·8	14·0	86	7·2	1·4	5·8	..	19·9	13·6	60	7·2	1·4	1·2	48	22·8	20·3	64	7·5	1·6	2·0	444
Chipping Norton	33·8	15·1	10·2	106	..	..	..	..	20·0	11·3	58	7·1	1·4	7·4	28	22·8	17·8	58	7·3	3·2	2·0	180
Cabramatta Creek	37·2	15·2	9·5	130	7·4	2·0	18·0	..	20·2	9·5	63	7·1	2·3	9·4	92	22·8	15·3	64	7·7	3·0	94·0	140
Horse Shoe Pond	39·1	15·8	7·0	173	..	..	..	..	20·6	7·5	74	7·1	4·2	3·2	280	22·8	14·7	69	7·3	3·2	4·0	264
Liverpool Weir	41·0	15·0	6·7	130	7·2	6·6	7·6	..	20·7	7·2	83	7·2	2·8	7·4	320	23·3	11·7	71	7·2	8·8	3·0	1 120

Table 2—Cooks River

Station description	Kilometres from entrance	Survey 9.9.71 Temperature °C	Salinity per mill	Dissolved Oxygen per cent saturation	pH	B.O.D. mg/litre	Suspended solids mg/litre	E. coli per 100 ml	Survey 28.10.71 Temperature °C	Salinity per mill	Dissolved Oxygen per cent saturation	pH	B.O.D. mg/litre	Suspended Solids mg/litre	E. coli per 100 ml	Survey 23.12.71 Temperature °C	Salinity per mill	Dissolved Oxygen per cent saturation	pH	B.O.D. mg/litre	Suspended solids mg/litre	E. coli per 100 ml
Cooks River Boat Ramp	0·7	15·1	34·4	85	8·2	2·9	4·6	..	18·3	32·9	48	7·8	4·6	3·8	4	21·5	30·7	8	7·3	9·0	135·0	..
Head of Kyeemagh Canal	1·8	15·4	31·5	27	..	..	..	..	19·0	33·9	55	7·9	2·0	0·6	0	23·7	29·5	70	8·4	8·6	48·0	..
Entrance to Alexandra Canal	2·6	15·2	33·2	53	..	..	..	..	18·7	31·0	0	7·3	11·6	8·4	546	22·5	27·8	2	7·6	9·2	2·0	..
Ricketty Street Bridge-Alexandra Canal	4·5	15·9	28·0	0	7·2	28·6	20·0	..	19·4	27·6	0	6·8	>128	17·2	21 900	22·5	26·5	0	7·0	24·0	3·0	..
Head of Alexandra Canal	6·3	16·1	27·9	0	7·0	34·6	26·0	..	20·9	8·2	0	6·8	>128	23·8	24 600	22·6	25·4	0	6·7	50·0	54·0	..
Princes Highway	3·0	15·5	33·2	55	..	..	..	..	19·1	31·6	62	7·7	4·6	1·6	0	22·7	28·2	2	7·3	5·6	73·0	..
Halfway to Bankside Avenue	4·0	15·6	32·4	40	7·9	2·0	5·4	..	19·2	30·3	67	7·6	9·2	4·6	0	22·4	28·7	6	7·4	4·8	48·0	..
Bankside Avenue	5·9	15·7	30·8	23	..	..	..	..	19·7	28·2	74	7·9	10·8	6·8	80	23·1	22·2	6	7·4	6·2	57·0	..
Wardell Road	8·0	16·0	25·7	49	7·6	3·3	2·4	..	19·6	25·3	76	7·9	10·4	9·8	64	23·6	17·5	30	7·6	8·2	36·0	..
Canterbury Road	9·8	16·1	20·1	80	..	..	..	..	19·6	23·1	100	8·1	13·2	9·0	424	24·0	10·8	57	8·2	12·8	36·0	..
Burwood Road	11·6	16·0	16·7	133	8·1	6·0	38·0	..	20·2	20·3	142	8·4	16·8	5·6	124	25·3	6·1	112	9·1	16·6	24·0	..

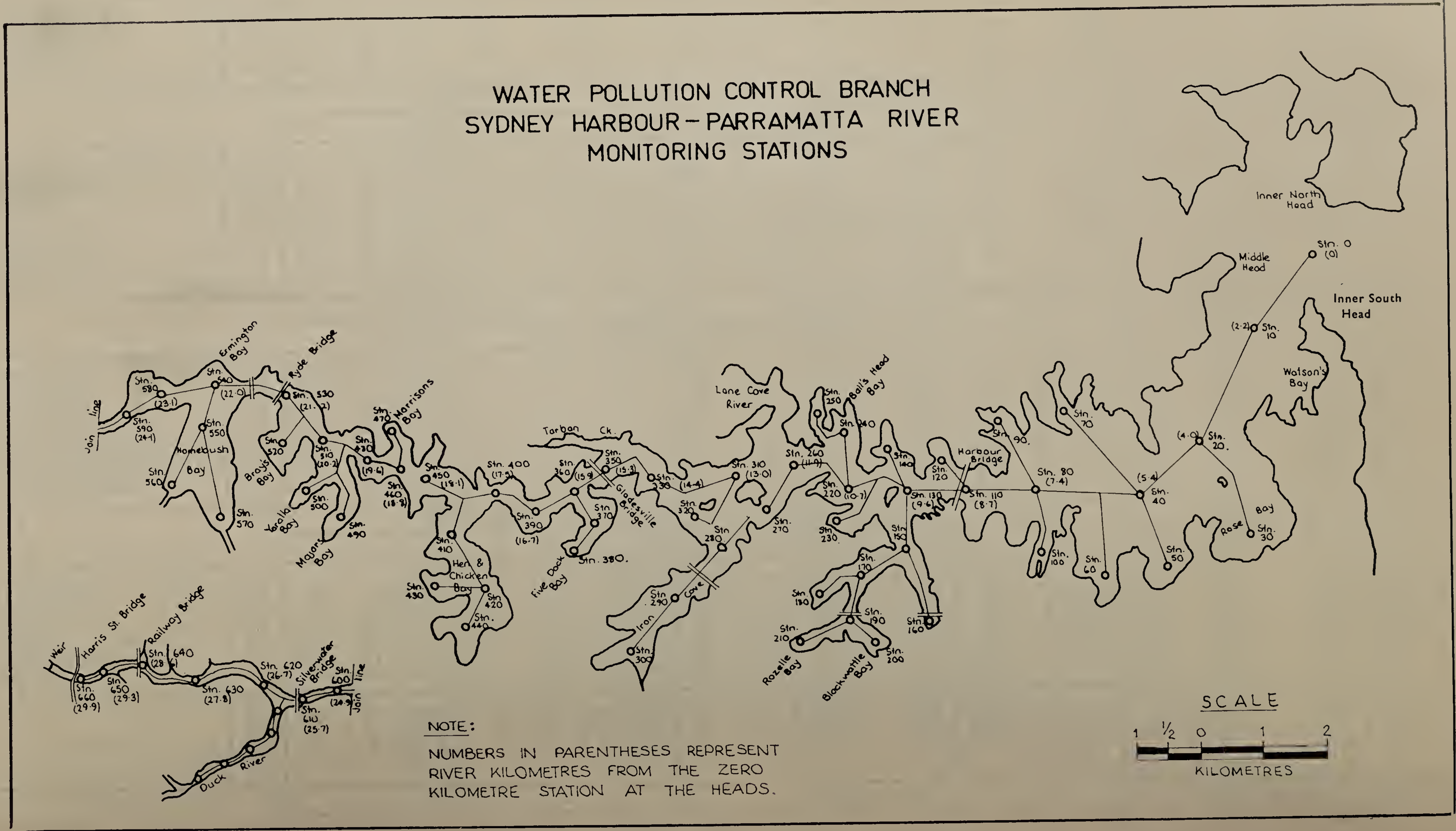
Table 3—Parramatta River

Station description	Kilometres from entrance	Survey 24.8.71 Temperature °C	Salinity per mill	Dissolved Oxygen per cent saturation	pH	B.O.D. mg/litre	Suspended solids mg/litre	E. coli per 100 ml	Survey 7.10.71 Temperature °C	Salinity per mill	Dissolved Oxygen per cent saturation	pH	B.O.D. mg/litre	Suspended Solids mg/litre	E. coli per 100 ml	Survey 9.11.71 Temperature °C	Salinity per mill	Dissolved Oxygen per cent saturation	pH	B.O.D. mg/litre	Suspended solids mg/litre	E. coli per 100 ml
Between Heads	0	15·6	35·0	109	8·2	..	0	..	15·8	35·1	101	8·2	3·3	0	0	..	..	..	..	..	..	..
Bradleys Head	5·4	15·4	34·6	99	8·1	..	0	..	16·2	34·9	97	..	..	..	..	..	..	..	..	..	..	..
Harbour Bridge	8·7	15·1	34·0	99	8·1	..	0·6	..	16·3	34·8	92	8·2	1·0	0	16	18·3	35·0	85	8·1	1·1	2·2	4
Glebe Island Bridge	..	15·0	33·7	77	7·9	..	0	..	..	..	..	..	..	..	..	18·2	33·6	74	7·8	2·3	2·8	264
Iron Cove	..	13·9	33·2	81	8·0	..	1·0	..	..	..	..	..	..	..	..	18·6	34·8	88	7·9	2·2	7·2	0
Gladesville Bridge	15·3	14·4	32·3	96	8·1	..	1·8	..	16·8	34·4	85	8·0	3·8	0·6	0	19·1	34·9	70	7·9	1·1	3·6	0
Bedlam Point	17·5	14·4	31·4	66	7·7	2·9	6·0	..	17·2	339·	79	..	..	..	..	19·3	34·5	72	7·9	2·2	7·6	0
Ryde Bridge	21.2	14·8	29·6	55	7·6	2·8	9·4	..	17·8	33·2	74	7·9	6·1	6·2	12	21·0	32·2	61	7·7	7·5	2·0	740
Silverwater Bridge	25·7	18·6	25·2	56	7·3	10·0	14·6	..	21·0	31·6	55	7·7	>13	8·8	0	22·7	30·0	21	7·5	3·1	3·4	520
Camellia Rail Bridge	28·6	15·5	17·5	31	..	..	..	..	20·5	27·2	83	8·2	7·7	3·6	32	22·7	28·8	8	7·5	4·0	6·6	7 480
Duck River 2·5 km upstream	..	19·7	24·2	11	6·9	4·3	21·6	..	26·0	28·0	25	7·7	>13	11·6	..	26·7	27·3	4	10·0	12·0	265·0	524

Table 4—Lane Cove River

Station description	Kilometres from entrance	Survey 26.8.71 Temperature °C	Salinity per mill	Dissolved Oxygen per cent saturation	pH	B.O.D. mg/litre	Suspended solids mg/litre	E. coli per 100 ml	Survey 19.10.71 Temperature °C	Salinity per mill	Dissolved Oxygen per cent saturation	pH	B.O.D. mg/litre	Suspended Solids mg/litre	E. coli per 100 ml	Survey 9.11.71 Temperature °C	Salinity per mill	Dissolved Oxygen per cent saturation	pH	B.O.D. mg/litre	Suspended solids mg/litre	E. coli per 100 ml
Greenwich Point	0	14·8	33·7	61	8·1	2·1	10·0	..	18·2	34·8	93	8·2	2·3	3·8	4	18·8	35·1	85	..	..	..	..
Longueville Wharf	2·4	14·3	32·9	63	8·0	2·1	10·2	..	19·0	34·6	90	8·1	3·2	1·2	4	18·8	34·9	90	8·0	1·7	0·4	0
Head of Burns Bay	..	14·5	32·3	50	7·9	1·8	8·6	..	19·8	34·2	86	8·0	3·4	3·2	0	18·3	34·7	83	8·0	1·5	4·6	0
Figtree Bridge	4·9	14·2	32·0	50	7·8	1·9	16·0	..	19·5	34·1	81	8·0	1·9	10·4	4	18·8	34·6	75	7·8	1·3	9·2	4
Epping Road Bridge	9·0	14·3	26·3	28	7·4	1·9	3·0	..	20·6	31·0	93	7·8	2·5	1·8	0	20·0	32·0	74	7·7	0·3	6·0	4
Fullers Road Bridge	11·7	14·5	23·3	26	7·4	2·6	10·0	..	21·0	28·3	103	7·8	3·1	1·4	8	21·0	30·2	82	7·6	1·4	0·6	32

Figure 1.


WATER POLLUTION CONTROL BRANCH
SYDNEY HARBOUR – PARRAMATTA RIVER
MONITORING STATIONS
Inner North Head
Middle Head
Inner South Head
Watson's Bay
Rose Bay
Harbour Bridge
Ball's Head Bay
Lane Cove River
Tarban Ck.
Gladesville Bridge
Iron Cove
Rozelle Bay
Blackwattle Bay
Five Dock Bay
Hen & Chicken Bay
Morrisons Bay
Majors Bay
Yaralla Bay
Bray's Bay
Ryde Bridge
Ermington Bay
Homebush Bay
Join line
Weir
Harris St. Bridge
Railway Bridge
Silverwater Bridge
Duck River
Stn. 0 (0)
Stn. 10 (2·2)
Stn. 20 (4·0)
Stn. 30
Stn. 40 (5·4)
Stn. 50
Stn. 60
Stn. 70
Stn. 80 (7·4)
Stn. 90
Stn. 100
Stn. 110 (8·7)
Stn. 120
Stn. 130 (9·6)
Stn. 140
Stn. 150
Stn. 160
Stn. 170
Stn. 180
Stn. 190
Stn. 200
Stn. 210
Stn. 220 (10·7)
Stn. 230
Stn. 240
Stn. 250
Stn. 260 (11·9)
Stn. 270
Stn. 280
Stn. 290
Stn. 300
Stn. 310 (13·0)
Stn. 320
Stn. 330 (14·4)
Stn. 350 (15·3)
Stn. 360 (15·9)
Stn. 370
Stn. 380
Stn. 390 (16·7)
Stn. 400 (17·5)
Stn. 410
Stn. 420
Stn. 430
Stn. 440
Stn. 450 (18·1)
Stn. 460 (18·8)
Stn. 470
Stn. 480 (19·6)
Stn. 490
Stn. 500
Stn. 510 (20·2)
Stn. 520
Stn. 530 (21·2)
Stn. 540 (22·0)
Stn. 550
Stn. 560
Stn. 570
Stn. 580 (23·1)
Stn. 590 (24·1)
Stn. 600 (24·9)
Stn. 610 (25·7)
Stn. 620 (26·7)
Stn. 630 (27·8)
Stn. 640 (28·6)
Stn. 650 (29·3)
Stn. 660 (29·9)
SCALE
1 ½ 0 1 2
KILOMETRES
NOTE:
NUMBERS IN PARENTHESES REPRESENT RIVER KILOMETRES FROM THE ZERO KILOMETRE STATION AT THE HEADS.

WATER POLLUTION CONTROL BRANCH
GEORGES RIVER MONITORING STATIONS

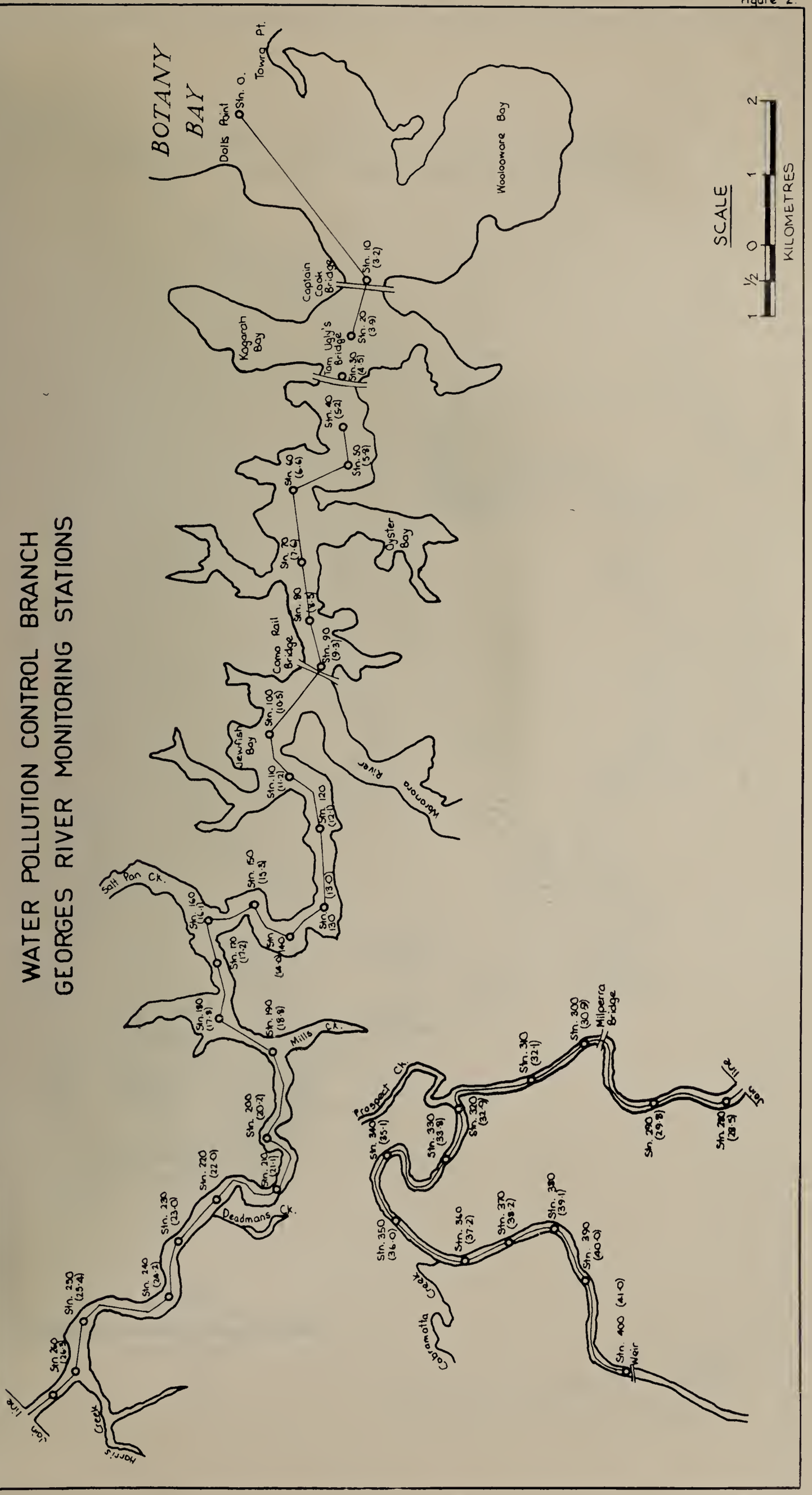
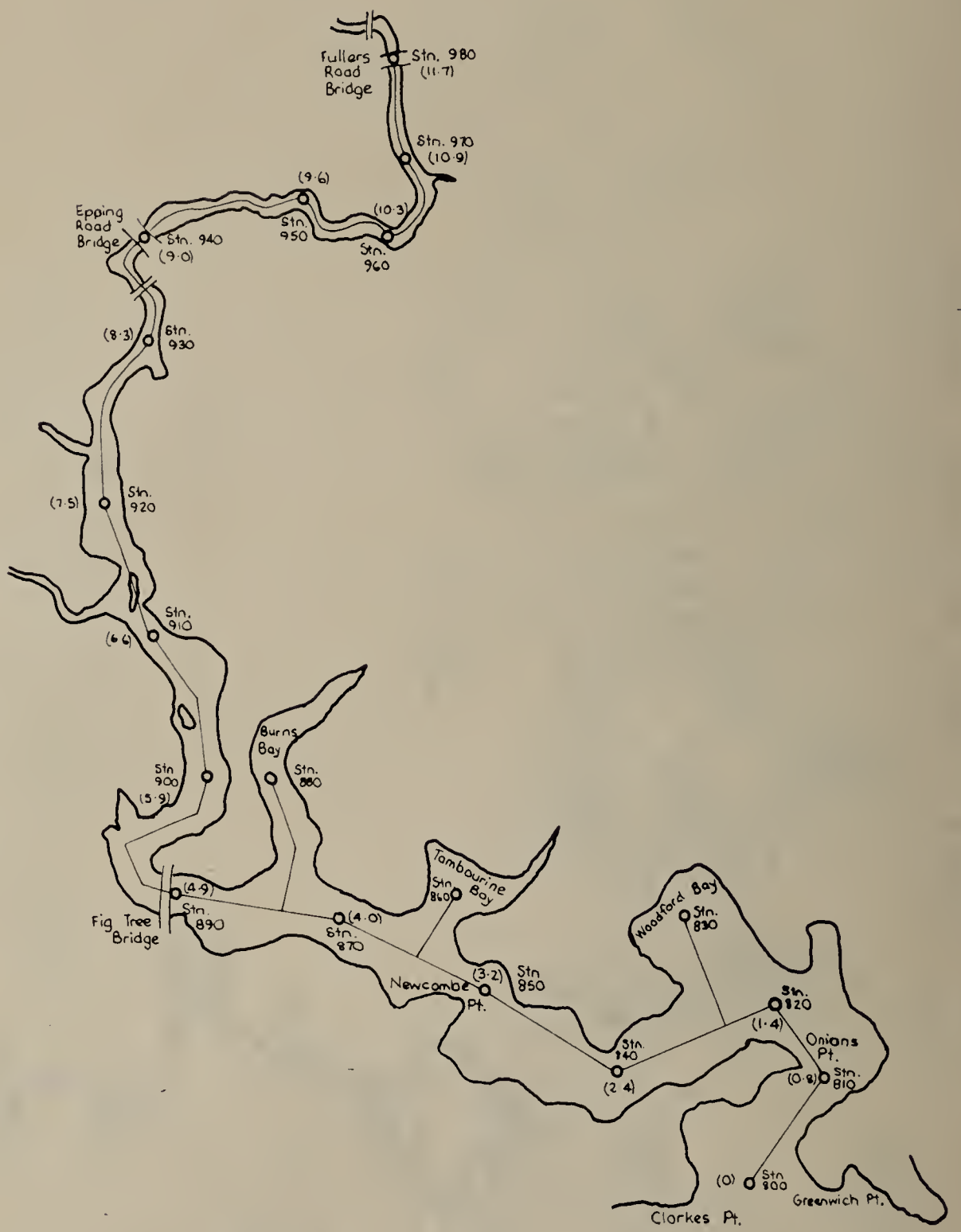


Figure 2.

Figure 3.

WATER POLLUTION CONTROL BRANCH
LANE COVE RIVER MONITORING STATIONS



SCALE

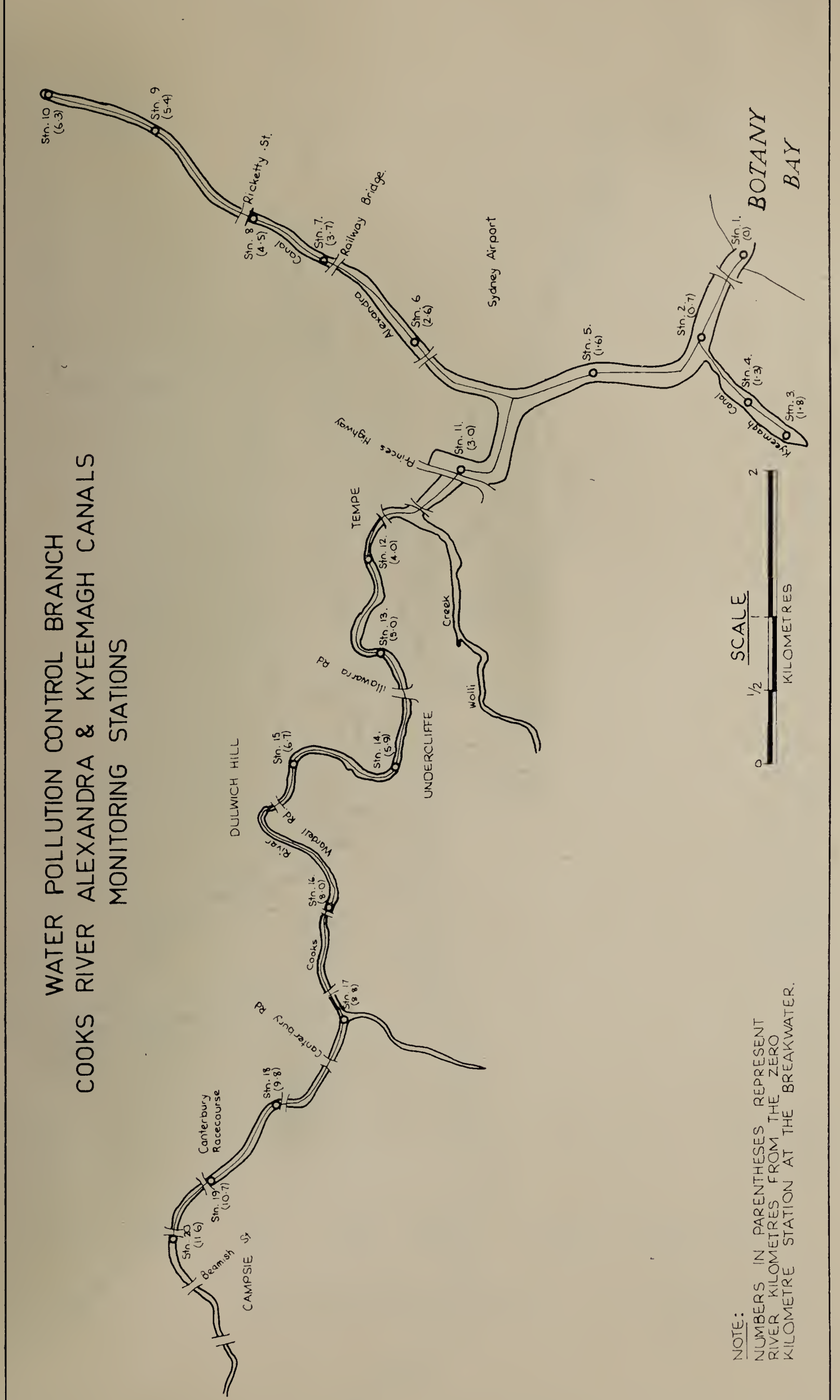
0 ½ 1 2

KILOMETRES

NOTE:
NUMBERS IN PARENTHESES REPRESENT RIVER KILOMETRES FROM THE ZERO KILOMETRE STATION AT CLARKES POINT.

Figure 4

WATER POLLUTION CONTROL BRANCH
COOKS RIVER ALEXANDRA & KYEEMAGH CANALS
MONITORING STATIONS



NOTE:
NUMBERS IN PARENTHESES REPRESENT RIVER KILOMETRES FROM THE ZERO KILOMETRE STATION AT THE BREAKWATER.

WATER POLLUTION CONTROL BRANCH N.S.W. DEPARTMENT OF HEALTH

SYDNEY HARBOUR – PARRAMATTA RIVER

Variation in Dissolved Oxygen at 0·5 metres depth

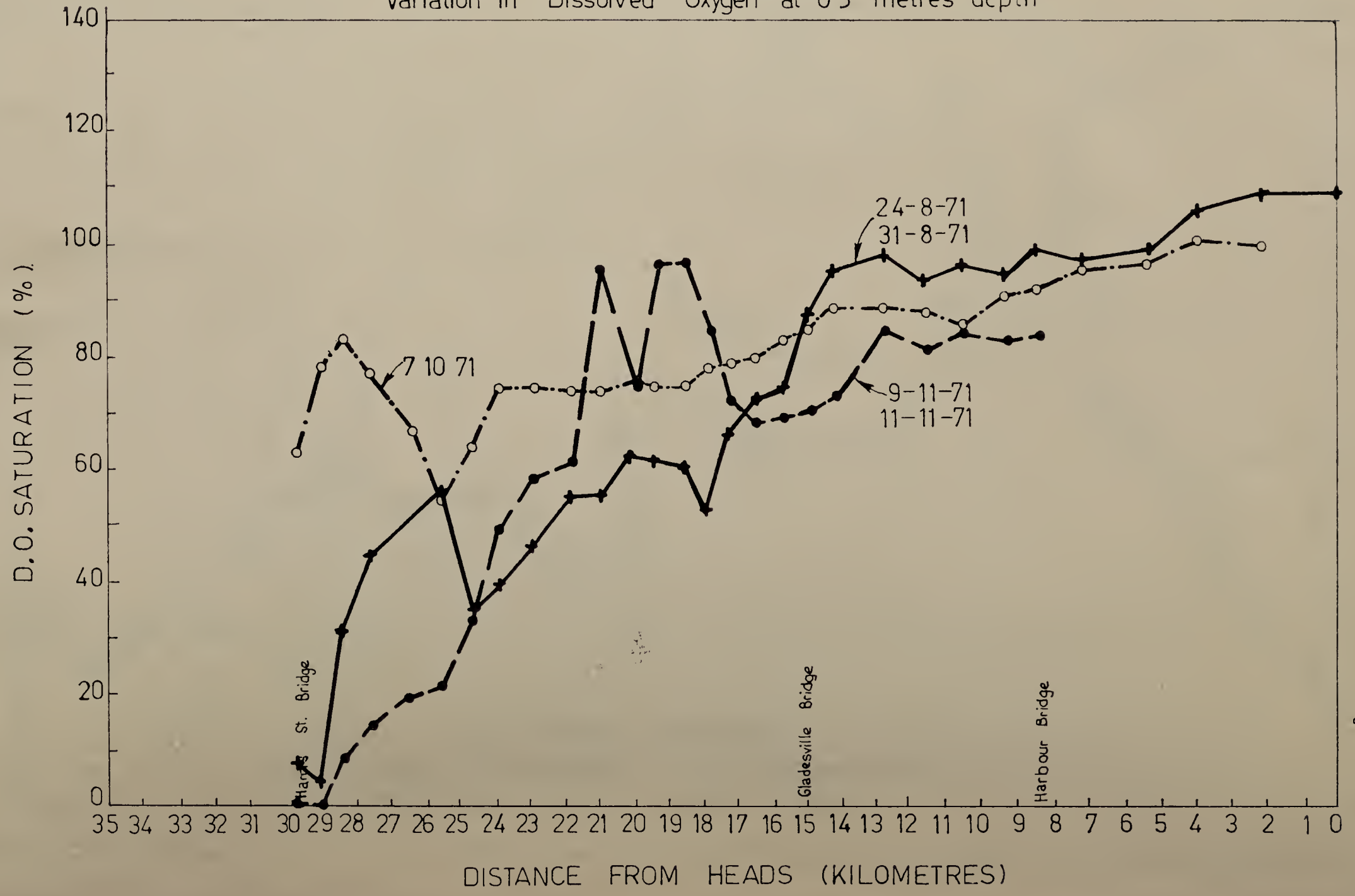


Figure 1A.

WATER POLLUTION CONTROL BRANCH N.S.W. DEPARTMENT OF HEALTH

GEORGES RIVER

Variation in Dissolved Oxygen at 0·5 metres depth

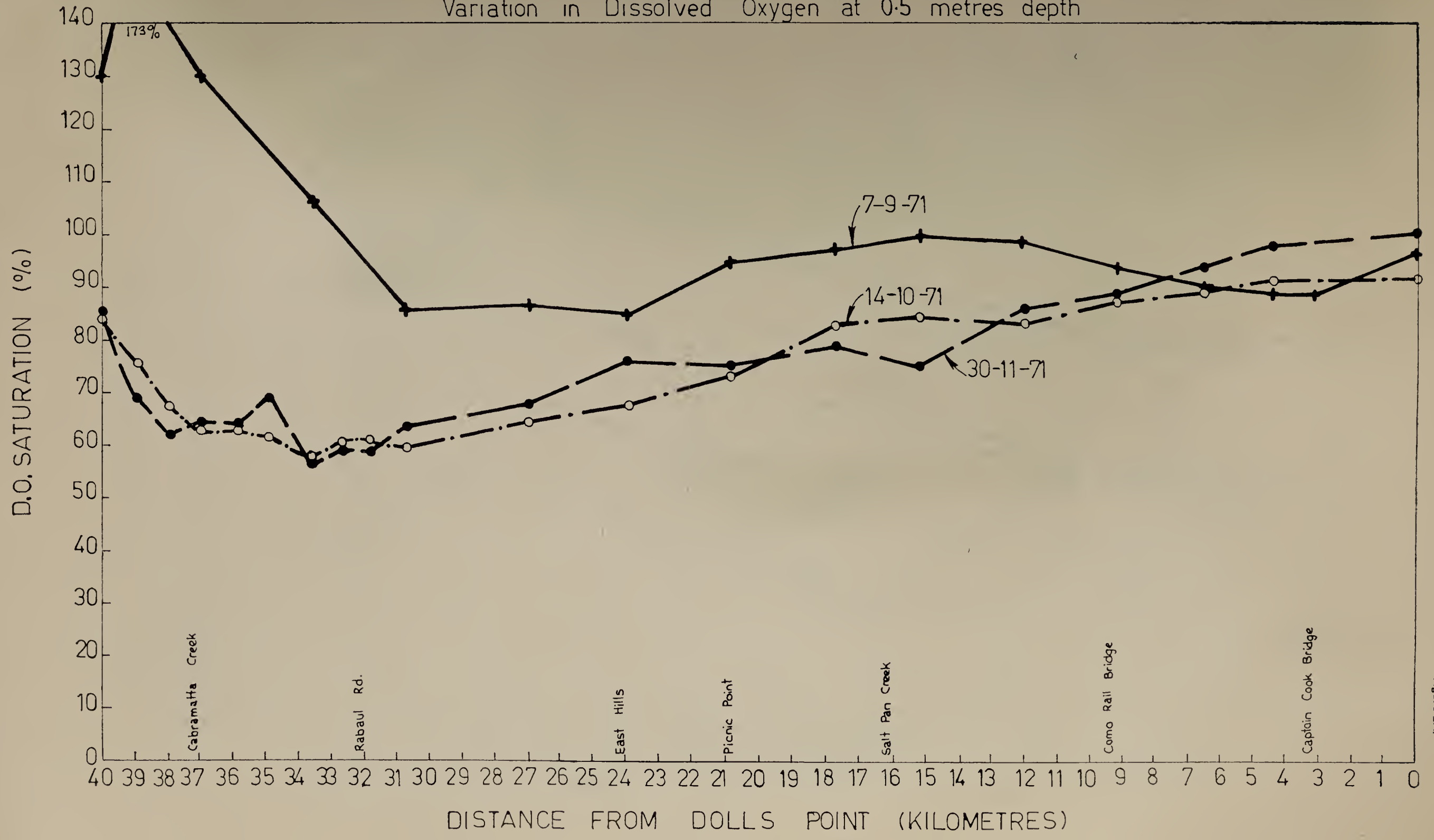


Figure 2A.

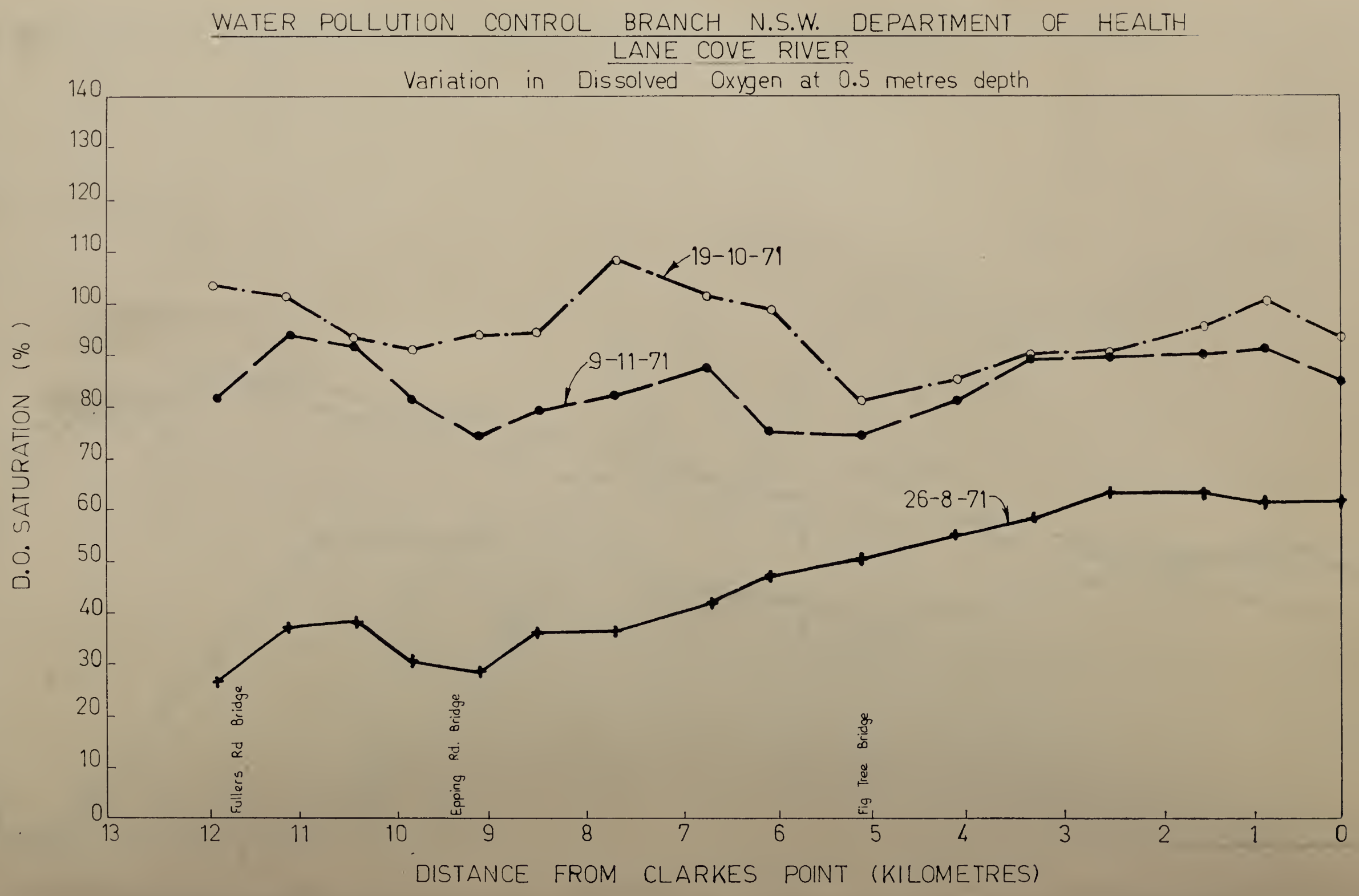
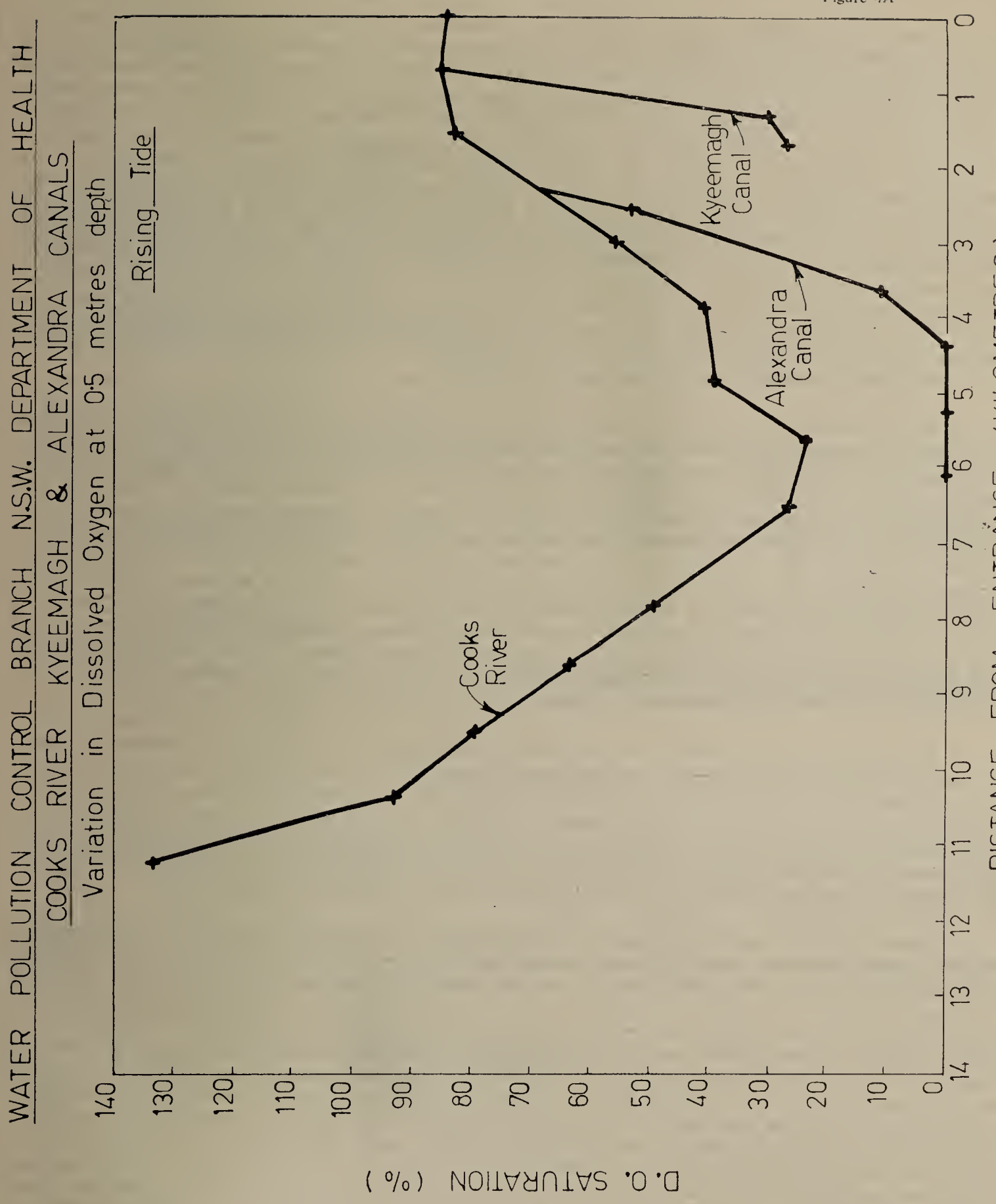

WATER POLLUTION CONTROL BRANCH N.S.W. DEPARTMENT OF HEALTH
LANE COVE RIVER
Variation in Dissolved Oxygen at 0.5 metres depth
D.O. SATURATION (%)
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
19-10-71
9-11-71
26-8-71
Fullers Rd Bridge
Epping Rd. Bridge
Fig Tree Bridge
13
12
11
10
9
8
7
6
5
4
3
2
1
0
DISTANCE FROM CLARKES POINT (KILOMETRES)

Figure 3A

Figure 4A


WATER POLLUTION CONTROL BRANCH N.S.W. DEPARTMENT OF HEALTH
COOKS RIVER KYEEMAGH & ALEXANDRA CANALS
Variation in Dissolved Oxygen at 0·5 metres depth
Rising Tide
Kyeemagh Canal
Alexandra Canal
Cooks River
D. O. SATURATION (%)
DISTANCE FROM ENTRANCE (KILOMETRES)
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14

THE INSTITUTE OF CLINICAL PATHOLOGY AND MEDICAL RESEARCH

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Traditionally, health department laboratories have been concerned with the control of infectious diseases as these have been a major cause of sickness and death throughout recorded history. In New South Wales a Microbiological Laboratory was established for this purpose in the Department of Public Health about 80 years ago. After the war, the discovery and use of antibiotics brought about a dramatic fall in the incidence of infectious diseases so that microbiology declined to some extent in importance; however, at the same time there occurred an explosive growth in other aspects of laboratory medicine which came to be included under the general heading of "Pathology". Up until this time the term pathology had embraced little more than the study of structural changes wrought in the body by various disease processes, and was carried out mainly on tissues of the body after death and to a lesser extent on tissues removed surgically. However, it had long been recognized that many illnesses produce no perceptible structural damage to the body and yet cause profound disturbances of function; but it is really only in the past 25 years that the means to analyse these disorders of function have become available. Nowadays by the application of sophisticated techniques of physics and chemistry it is possible to undertake extremely accurate chemical analyses on minute quantities of tissue or blood which enable us to characterize the often slight departures from normal which may cause such profound derangements of function.

All of the above activities have now come to be included under the general heading "Clinical Pathology" as a specialized branch of medicine, and the rapid development of this speciality in recent years has been accompanied by a revolutionary change in the whole practice of medicine. Formerly clinical practice was largely an art, with the doctor relying on a careful history of symptoms and examination of the patient to elicit physical signs as a guide to diagnosis; treatment was largely empirical, with the gross reactions of the patient the only guide. But with the rapid development of Clinical Pathology, the whole picture was completely altered; medicine became a science and the clinician now demands precise measurements to ensure accuracy in diagnosis and precision in the control of treatment. Indeed, in an ever growing number of cases the clinical findings serve only as a guide to the laboratory investigations which should be performed. Accurate diagnosis depends not only on positive laboratory findings which are suggestive of certain disease but also on negative findings as well which help to exclude other diseases; in addition, in many patients the selection and control of treatment are also under laboratory guidance.

At first, this type of medicine was regarded as the prerogative of the larger teaching hospitals; but soon after the War its practice widened rapidly, and by the mid-1950's the staff of many non-teaching hospitals in the metropolitan area, and of country district and base hospitals, were clamouring for greater laboratory investigational facilities. In an attempt to satisfy these growing needs, many doctors and smaller hospitals, both country and metropolitan came to submit specimens of various sorts to the Microbiological Laboratory, which endeavoured to cope with these new developments despite substandard accommodation, obsolete facilities and limited staff.

Because of these new developments in medical practice the New South Wales Department of Public Health decided to establish a new central laboratory which was intended to go a long way towards meeting the needs of the State for proper laboratory diagnostic facilities, and in mid-1959 the present Institute of Clinical Pathology and Medical Research commenced operations. The prime purpose of this institute has been to provide a comprehensive clinical pathology service for New South Wales, and to offer all clinical pathological tests of proved usefulness for which there is a demand. The service is freely available to all State and public hospitals, but clearly it has never been the intention that the Institute should perform all laboratory tests for each of these hospitals, which range from major teaching institutions with their own highly developed pathology departments, through the suburban and country base or district hospitals with laboratories of varying capability, right down to small hospitals with no laboratories at all in some of the rural centres. The intention has rather been that each hospital should perform all the laboratory work of which its own pathology department is capable, and that it should have performed by the institute only those tests which it cannot itself carry out. The result of this arrangement has been that, although virtually every hospital in the State relies to some extent on the service of the institute, the teaching hospitals send only the rarer more complex or sophisticated tests; the larger non-teaching hospitals, which are capable of performing most routine investigations, send to the institute a variety of tests requiring special skills or equipment not available to them, while many of the smaller hospitals send almost all of their laboratory work to the institute. Aside from this service to hospitals the institute will also accept specimens from private doctors relating to patients unable to afford the fees of a private pathologist, or requiring investigations not performed by a pathologist in private practice to whom he has ready access. Doctors may submit without restriction specimens relating to infectious disease, such as venereal disease, tuberculosis or any other parasitic, bacterial or viral infections. In addition, the institute undertakes the examination of Papanicolaou smears for the detection of cancer of the cervix,

a service available free to any woman in the State; this is carried out as an exercise in preventive medicine on a mass screening basis. Apart from its service function, the institute provides training for doctors wishing to specialize in clincial pathology and for medical technologists and pathology technicians; research is pursued in various specialized branches of laboratory medicine.

As in the past, the various activities of the institute will be considered under the following headings:

A. Clinical pathology service.

B. Training of pathologists and medical technologists.

C. Research.

A. CLINICAL PATHOLOGY SERVICE

Pathological Anatomy and Histology

This department is concerned with the gross and microscopic study of tissues removed surgically for purposes of diagnosis or for assessment of progress during the course of treatment. Of particular importance is the diagnosis of malignant disease as it is only by histological examination that this can be definitely confirmed or excluded.

The number of specimens received during the year totalled 13,856, from which 57,044 sections were prepared and examined. It is of interest to record that in 2,036 instances the diagnosis of cancer was established (787 major cancers; 1,249 skin cancers); equally noteworthy is the large number of people who could be reassured that their disease was not malignant. Autopsies performed for the Lidcombe Hospital totalled 225 and organs and tissues from another 102 were submitted from other hospitals. During the year 71 specimens were mounted and added to the Museum of Pathological Anatomy and the comprehensive collection of teaching material in the museum now approximates 700 specimens.

Further development of the histochemical branch of the department, together with use of the recently acquired electron microscope will allow a wider range of valuable diagnostic and investigative techniques.

The Histopathology Department now ranks as the largest in Australia and the voluminous and varied material referred here for examination ensures wide experience for the staff at all levels.

During the year Dr Joan Cooper Booth, senior histopatholgist spent 3 months on study leave at the Armed Forces Institute of Pathology in Washington, D.C., and also visited other departments in the United States of America and the United Kingdom.

Exfoliative Cytology

Exfoliative cytology is concerned with the microscopic examination of cells which as a normal event are constantly being shed from body surfaces. It is now well-recognized that changes indicative of developing cancer are recognizable in such exfoliated cells long before the disease becomes manifest clinically. Cancer of the cervix of the uterus, one of the commonest cancers of women, is particularly susceptible to early detection by this method, and in 1962, a Department of Exfoliative Cytology was established at the institute in order to provide a statewide service for the early detection of uterine cancer. During the year the work of this Department expanded further, specimens being submitted by some 3,000 doctors from all over the State. In all 218,312 specimens were received, an increase of 8 per cent over the figure for 1970.

The growth rate in the work done by the Department of Exfoliative Cytology over the 10 years since it was opened is shown below:

SMEARS RECEIVED

	Smears
1962	16,512
1963	37,538
1964	56,565
1965	87,828
1966	127,890
1967	155,969
1968	172,040
1969	189,590
1970	202,003
1971	218,312
Total	1,264,247

To date 2,936 women have been treated for preclinical cervical cancer as a result of positive smear findings; a further twelve confirmed cases are still awaiting definitive treatment. With the setting up of the Central Cancer Registry a decline in the incidence of the number of women presenting with clinical cervical cancer should be revealed in the next decade; before the registry was established it was virtually impossible to obtain reliable figures for incidence of cancer of the cervix. A little-recognized benefit resulting from the screening campaign has now become apparent. Many women with positive smears were found to have clinical cervical cancer but were symptomless at the time the smear was taken; sixty-seven such cases were discovered, so these women had their clinical cancer diagnosed at an earlier date because of the campaign. Their chances of cure should be greatly improved.

It has, of course, long been recognized that because of eye fatigue a scanner could spend no more than half the working day at the microscope. The employment of scanners on a part-time basis has proved very successful; it has been established that a scanner working for half a day has nearly as great an output as one working full-time.

The formulation of methods for abstracting useful information by computer from the accumulated data of the Uterine Cancer Detection Campaign is proceeding.

Exfoliative cytology has also been applied to assist in the clinical diagnosis in cases of suspected cancer of the stomach, lung, urinary bladder, etc; a total of 7,988 such examinations were carried out during the year.

Haematology

Haematology is concerned with the investigation of blood disease. During the year the Haematology Department received 10,647 specimens on which 45,640 investigations were carried out. As in previous years, the greater proportion of the work is made up of the more complex investigations so that the bare figures of output give little indication of the actual increase in work load. There has been a significant upswing in the number of difficult blood and marrow films sent in from suburban and country hospitals for consultative opinion. Diagnostic tests for haemoglobinopathies have been continued and as awareness of these disorders has increased such tests have come to be used more and more as a basis for genetic counselling. As well as the routine quantitation of haemoglobin A_2 for the diagnosis of the disease thalassaemia minor, a simple mass screening procedure for detecting abnormal haemoglobins is in use. There has been an increased use of electrophoresis for detecting abnormal haemoglobins; and investigations of the oxygen carrying capacity of haemoglobin is about to be undertaken.

Red cell folate estimations have also increased significantly during the year; They are available for the investigation of megaloblastic anaemias and are also being applied in alcoholism, epilepsy and pregnancy. Because of the complexity of these investigations, they must all be carried out by senior staff and this has imposed a heavy burden on this Department. However, the introduction of vitamin B_{12} estimation by an isotopic dilution technique, in conjunction with the existing microbiological assay, has expedited the issue of most B_{12} reports. Small numbers of isotopic tests such as the B_{12} binding capacity in leukaemia and intrinsic factor antibody tests are now performed.

During the year Dr B. J. Arnold, the senior haematologist, returned from 7 months study leave spent at the Royal Post-graduate Medical School in London and in various institutions in the United States of America.

Venereal Disease Serology

This Department is concerned with carrying out blood tests for the diagnosis of syphilis and also does a smaller number of serological tests relating to gonorrhoea and lymphogranuloma venereum. During the year 172,995 serological tests were carried out, an increase of 6 per cent on the corresponding figure for 1970. The number of tests done for public hospitals was 37,126; for mental hospitals 28,257; for the Epidemiology Division 33,012; for the Prisons Department 15,400 and for private medical practitioners 26,271.

When, at the request of the National Health and Medical Research Council, this institute assumed reference responsibilities for treponema pallidum immobilization (T.P.I.) and fluorescent treponemal antibody (F.T.A.) tests for the whole of Australia, the Health Departments of all States were notified by circular of the availability of the service and many specimens are now being received from other states for these highly specific and sensitive tests. Specimens for T.P.I. tests are also received from New Zealand, New Guinea and Fiji. During the year 6,489 such tests were done compared with 4,189 in 1970. The World Health Organization has now asked that the Venereal Disease Serology Department at the institute assume reference functions for the south West Pacific Region.

Virology

Virology is concerned with the study of viruses and the diseases that they produce. A total of 26,947 specimens was received during the year (an increase of 25 per cent over the previous year) and 37,637 examinations were carried out on them. The number of tests for rubella antibodies has continued to increase, but at a slower rate than during the previous year. Since more than twenty other laboratories in the State are now estimating rubella antibodies it is not expected that the number of requests for this test will increase substantially in the future. These tests are undertaken for one of three reasons:

(a) the diagnosis of rubella in pregnant women,

(b) investigations of pregnant women who have had contact with a case of rubella, and

(c) estimation of immunity status in pregnant women. Non-immune women in this latter group are vaccinated *post partum* in accordance with the recommendations of the National Health and Medical Research Council.

A rubella haemagglutination inhibition test quality control survey was organized by the Virology Department and twenty-three laboratories within the State have co-operated; by and large the results were remarkably good and uniform.

It is of interest to note that the number of tests for rubella specific IgM increased from none in 1970 to 294 in 1971. This test is very time consuming, but in certain instances, is the only method suitable for the diagnosis of rubella. This laboratory is the only one in the State performing this test and consequently, it receives sera from large numbers of problem cases from other institutions.

Bacteriology

The Bacteriology Department is concerned with the direct and indirect identification of micro-organisms causing disease, and also in determining the most appropriate form of antibiotic therapy to be used.

During the year the Bacteriology Department received 25,603 specimens, 17 per cent more than in 1970. On these 73,693 examinations were carried out, 12 per cent more than in the previous year. The increased work resulted party from the submission of more clinical specimens but also from the referral of bacterial cultures from other laboratories; the processing of these requires proportionately more skilled staff time than do ordinary specimens. One of the important roles of the department remains the provision of the service in clinical bacteriology to Lidcombe Hospital. A growing service is provided to smaller hospital laboratories, particularly in the country, in the identification of cultures of fungi and of bacteria. Serological tests for toxoplasmosis are done on specimens referred from all over the State, including most of the teaching hospitals.

The mycobacterial laboratory continued to receive large numbers of specimens from Chest Clinics, country hospitals and metropolitan sources, and it is expected that the closure of the Anti-Tuberculosis Association laboratories will result in a substantial increase in this work.

An important Public Health Laboratory service is the diagnosis of gonorrhoea for the Division of Epidemiology and for government institutions such as the Minda Remand Centre, Lidcombe, and the Women's Training and Detention Centre at Silverwater. In addition, many specimens are now received from the female Venereal Disease Clinic which was recently opened at the Division of Epidemiology.

Clinical Biochemistry

Clinical biochemistry is concerned with the chemical analyses of blood, tissues, and other body constituents and products. During the year 28,398 specimens were received and on these 77,103 tests were performed. The average number of tests per specimen rose from 2·4 last year to 2·7 this year, yet there was a slight decline in the total number of specimens received largely because of a marked fall in the demand for protein bound iodine estimations. Many laboratories have introduced T_3 and T_4 resin tests, which are now available in convenient kit form and it is likely that these will supersede the more difficult protein bound iodine estimation. The proportion of highly complex investigations with their greater demands on skill and training continue to grow, so the actual time expended per investigation is, of necessity, considerably longer than would be required for the more straightforward "bread and butter" types of analysis; this applies particularly to immunoglobulin and other spcific protein studies and lipoprotein profiles. The demand for serum electrophoresis for immunoglobulin assay has been maintained at a high level. The electrophoretic separation and analysis of serum lipids, and the typing of hyperlipo-proteinaemia has become an important facet of the routine work and is expanding because of the prevailing interest in relating heart disease to serum lipid abnormalities. The rate of growth in this particular area is illustrated by the fact that in 1968 no lipid electrophoresis were undertaken; in 1969 the figure was 108, in 1970, 754, and this year the figure is 1,644 estimations. In the same period immunoglobulin assays rose from 312 in 1968 to 2,176 in 1969, 4,180 in 1970 and 5,148 in 1971.

In general, therefore, the biochemistry department has tended to expand rather more in specialized fields than in the common routine procedures, the pattern of work undertaken being influenced to a considerable extent by the fact that the major hospitals tend to send specimens to the institute which they are unable to submit to time saving techiques using automated equipment.

B. TRAINING

Training of Medical Graduates as Pathologists

The institute enjoys full recognition by the University of Sydney and the Royal College of Pathologists of Australia as an approved laboratory for the training of medical graduates seeking specialist qualifications in pathology. Four registrars are at present undergoing training in the institute's laboratories. Post-graduate teaching activities are reinforced by attendance at seminars, scientific meetings, lectures and informal tutorials.

Bearing in mind that it is now only $12\frac{1}{2}$ years since the institute was established and that it took almost a year before an effective training programme was developed and trainees recruited, the results of our training programme have been most gratifying. Pathologists are required to undergo a minimum of 5 years postgraduate training before becoming eligible for membership of the Royal College of Pathologists of Australia, and in 1965 the first of our trainees qualified. During 1966, a further three qualified and in 1967 another four gained their specialist qualifications; another one graduated in 1968, another in 1970, two in 1971 and 2 more are confidently expected to qualify in 1972 The contribution which this institute is now making towards overcoming the serious shortage of pathologists in New South Wales is a matter for satisfaction. Regrettably, it appears that this happy state of affairs might be coming to an end. Previously we had no difficulty in recruiting good quality registrars, but in the past 2 years it has become increasingly difficult to obtain trainees. Our establishment for registrars is 6 and we may also take on 2 trainees for the Division of Forensic Medicine, but at present, despite repeated advertisements, we have only 4 in training.

Training of Technical Officers and Medical Technologists

Training of technical officers and medical technologists is conducted on an apprenticeship system combined with part-time formal studies at the Sydney Technical College. Trainee technical officers undergo a 4-year course after which they are eligible to sit for the Medical Technicians Certificate (previously Biology Certificate) at the Sydney Technical College and qualify as technical officers; after a further 2 years of study, i.e., 6 years in all, they may qualify for the post-certificate Diploma in Medical Technology. To date fifty-three trainees have qualified for the Biology Certificate, and of these seventeen have left without proceeding to the Diploma in Medical Technology. Of the remaining thirty-six, thirty-one acquired the post-certificate Diploma in Medical Technology but twenty-seven of these have resigned, so that the total yield from the vigorous training programme is four medical technologists.

The technical staff of the Department of Exfoliative Cytology known as scanners are all trained at the institute which is now in a position not only to offer training to pathologists and gynaecologists, but also to train cytotechnicians and scanners for outside bodies. Several from New South Wales and other States have already taken advantage of the training facilities offered by the institute.

C. RESEARCH

Although the principal effort of the institute is directed to the production of rapid and reliable results for routine diagnosis, an endeavour is constantly being made to advance knowledge in the field of pathology.

This endeavour falls broadly into three groups: Developmental work in which new techniques for diagnosis are being evolved or older techniques are being improved; epidemiological or other surveys in which the incidence or nature of disease in the community is being assessed; and, more fundamental research in which the interest, experience and abilities of various members of staff are directed towards the addition to medical knowledge in a way that is of less obvious or immediate benefit but which may in the long run be even more important.

All forms of research are currently severely restricted by the now enormous burden of routine work, lack of space and staff shortages, which have caused many of the more senior members of staff to spend a disproportionate amount of their time on routine tasks which should by rights be delegated to others. It is felt that, if the institute is to play the important role in the medical services of the State for which it was founded, it should seek to acquire a reputation for the advancement of medical knowledge in addition to that for the sound application of already well-known procedures. With respect to the third, more fundamental type of research, it might be held that there is less

urgency and less justification for support in an institute of this type especially in times of financial stringency. However, it must be pointed out that, with the exception of a few departments engaged in research related to pathology at the Universities of Sydney or N.S.W. and at the larger teaching hospitals, there are no organizations in the State of N.S.W. carrying out planned investigations in depth into fundamental processes of disease. Since the institute already has on its scientific staff persons with experience and interest and has also in daily use many forms of apparatus that is suitable for fundamental research purposes but which would be costly to purchase solely for research, it seems most appropriate that work of this nature should receive official sanction and financial encouragement. It is therefore hoped that the "Medical Research" section of the institute's name will grow in importance in the future and that it will come to represent a great deal more in the community than a laboratory service which merely provides many thousands of test results.

Current projects

Survey work. Over the past year a great deal of survey work has been carried out in relation to the various forms of testing that have been requested. In the Department of Virology an epidemiological study of influenza in the winter of 1970 was followed up into subsequent years in order to estimate the incidence of total infection in the population and the rate of subclinical infection. In this connection cases of fatal influenza that occurred in the 1970 epidemic were studied in the Department of Histopathology and the results publicised among the medical profession; this led to ongoing projects at the University of Sydney and at several teaching hospitals.

Again in virology, immunity to poliomyelitis was surveyed, antibody responses to rubella vaccination were estimated and cases of cytomegalovirus infection, rubella and toxoplasmosis were studied in depth.

In the Department of Bacteriology surveys were carried out on the incidence of toxoplasma infection in blood donors and on the incidence of faecal pathogens in children entering the Far West Children's Home at Manly.

In the venereal disease reference laboratory surveys were made of treponematosis in the Highlands of New Guinea and children of Kar Kar Island, New Guinea, (in conjunction with the Institute of Human Biology, Papua and New Guinea).

The Department of Biochemistry continued to accumulate data on various types of protein abnormality in the serum of patients with a wide range of disease so as to seek correlations and clinical implications, and surveys were undertaken on the normal range of serum proteins in Red Cross Blood donors in Sydney.

Developmental work. A considerable amount of developmental work was carried out over the past year despite the difficulties alluded to above.

In the Department of Virology a method for IgM globulin estimation in rubella patients was evolved, thus enabling a diagnosis to be made from a single specimen of serum in place of the usual paired (acute and convalescent) sera. This is an important advance since in many cases serum is collected too late in the disease to permit a definite diagnosis to be made on the basis of a rising titre. An extension of this work that is currently under way is the development of an immunofluorescent method for IgM estimation for rubella that may be capable of extension to other viral infections. In the venereal disease reference laboratory rapid plasma reagin tests were perfected for syphilis, yaws and leprosy.

In the Department of Bacteriology work was continued on the classification of "anonymous" mycobacteria and on the culture of mycoplasmas (organisms which are not cultured in other laboratories in this State).

The current research in Haematology involves the detailed characterisation of abnormal haemoglobin found on routine electrophoretic screening of all blood received into the laboratory and also from specific requests for haemoglobin electrophoresis. Briefly, the investigation involves separation of the abnormal haemoglobins by column chromatography. Globin prepared from the column fractions is separated into α and β chains by column chromatography. Trypsinization of these chains, followed by "fingerprinting" allows location of the abnormality to a certain peptide. Screening techniques identify the exact location of the amino acid change. It is also further proposed to investigate the effect of the abnormality on respiratory function by performing oxygen equilibrium measurements. These measurements will also be extended to blood of patients with erythrocytosis in order to screen for abnormal haemoglobins which may be electrophoretically silent but have abnormal oxygen affinity.

In the Department of Biochemistry work proceeded on the identification of adrenal and other steroids using gas chromatography and on the typing of serum proteins (both normal and abnormal) by immunoelectrophoresis.

A considerable amount of time was devoted by members of the Departments of Virology and Histopathology to the selection of an electron microscope that would be obtainable with the limited financial resources available and yet would have qualities rendering it suitable for investigational work into the early diagnosis of viral disease and the identification of other cellular and intercellular factors relating to pathogenetic mechanisms.

Fundamental research. Since the founding of the institute in 1959 there has been little opportunity for research into problems that were not closely related to the routine work in hand. Nevertheless, especially in the Department of Biochemistry in the field of steroid chemistry, some of the investigations that have been undertaken have been in considerable depth and have made the institute known in circles outside those engaged in routine medical practice.

Future plans. As has been stated earlier, there is at the institute no lack of enthusiasm or of personnel equipped to advance knowledge in the field of medicine. However, at present it is difficult to plan investigational projects that entail significant hours per week away from urgent day-to-day routine service commitments. Nevertheless, within these constraints a number of projects are under way or planned and should proceed, albeit at a far slower pace than is desirable.

In the Department of Virology, it is intended to develop the immunofluorescent method for IgM estimations from the field of rubella to other viral infections, particularly Coxsackie B myo/pericarditis, mumps and herpes simplex encephalitis, congenital cytomegalovirus infection, "Q" fever and psittacosis, where a rapid diagnosis is required, or no satisfactory method is available at present. It is also intended to pursue, as far as can be done within the present limitations of the institute, the investigation of non-bacterial gastroenteritis, particularly in young children in whom the disease is a major problem in Sydney. For this it is proposed to utilize the newly-acquired Philips 201 electron microscope to investigate organ cultures infected with virus. Recent studies in the U.S.A. have confirmed a viral aetiology for many of these cases; however, this work has been done in the main by using human volunteers, and the virus has not as yet been isolated in the conventional sense. Nevertheless, sufficient knowledge has been gained to suggest that the infective agent is a parvovirus and a technique for isolation would therefore be a major step forward.

In the Department of Biochemistry it is proposed to develop routine methods for radio-immunoassay for IgE (an antibody said to be concerned with asthma and related allergic states) and of several hormones such as ACTH, insulin and growth hormone. It is intended to develop screening methods for colonic cancer using radioimmunoassay of carcinoembryonic antigen. It is also hoped to embark upon a longer-term study of methods for the routine assessment in patients of cellular immune status, in which existing analyses of the serum proteins would be correlated with cellular aspects of immunity as demonstrated by lymphocytic stimulation by specific and non-specific antigens.

As a joint venture between the Department of Histopathology and other departments it is intended to pursue high resolution electron microscopy on viral infections, in lymphoproliferative disorders including myeloma and macroglobulinaemia and in diseases of liver and kidney in which biochemical changes in serum constituents can be demonstrated and analysed.

In addition, it is intended to continue survey work in the Department of Haematology, V.D. Serology and Bacteriology on diseases as they occur in the population at large. These projects involve co-operation with other organizations such as WHO (in the case of V.D. Serology) and the Division of Epidemiology of the N.S.W. Department of Health.

These projects, and many others like them, are capable of being pursued with profit at the Institute of Clinical Pathology and Medical Research. However, it must be stressed again that whenever the routine workload increases for those engaged in such investigations, either because of an increase in specimens submitted to the institute for analysis, or because of absence of personnel through sickness, leave or resignation, the lack of reserve staff on the establishment means that research projects must be set aside for long periods or indefinitely. Under such conditions it is hard to expect senior staff to sustain interest and enthusiasm for their work.

Additional Accommodation

Reference was made in last years report to the critical situation with regard to laboratory accommodation. This situation has, of course, worsened in the past year during which time the workload has continued its substantial growth rate. Although funds have been allocated and various committees have been involved in planning, there is as yet, no firm decision as to how and when the institute will be extended. There is no doubt whatsoever that, unless an early start is made on extensions to the institute, there will be no alternative but to restrict the intake of work.

THE NEW SOUTH WALES DEPARTMENT OF PUBLIC HEALTH

THE INSTITUTE OF CLINICAL PATHOLOGY AND MEDICAL RESEARCH

STATISTICAL SUMMARY OF SPECIMENS RECEIVED AND EXAMINATIONS COMPLETED

1ST JANUARY, 1971–31ST DECEMBER, 1971

Histopathology

	1970		1971	
	Specimens	Sections	Specimens	Sections
Surgical—				
No. specimens received	13,829		13,856	
Paraffin sections		46,529		50,346
Frozen sections		118		102
Post Mortems—				
No. performed (Lidcombe)	175		225	
Paraffin sections		2,282		4,489
No. performed (City Morgue)	115		2	
Total	290		227	
Museum and Library Specimens—				
No. mounted	22		71	
Paraffin sections		120		230
Miscellaneous		1,229		1,877
		50,278		57,044

Immunology

	1970	1971
Chorionic gonadotrophin immuno-assay	197	233
Antinuclear factor in serum	710	912
Thyroid antibodies in serum	106	166
L.E. latex flocculation	76	316
Latex flocculation test for rheumatoid factor	241	345
Miscellaneous and immunofluorescence	61	69
	1,391	2,041

Virology

Number of specimens	21,567	26,947
Examinations completed—		
Virus isolation and identification investigations	2,612	2,190
Complement fixation tests	6,575	7,305
Neutralisation tests	6,896	4,720
Smears for inclusion bodies (trachoma)	17	13
Haemagglutination tests	430	441
Haemagglutination-inhibition test	15,512	22,661
Virus identification	..	3
Gel diffusion for hepatitis	66	10
Rubella IgM estimations	..	294
	32,108	37,637

Haematology

Number of specimens	10,266	10,647
Examinations completed—		
Haemoglobin	7,139	7,660
Haematocrit	6,865	7,306
Red cell count	..	9
Reticulocytes	419	517
White cell count	4,762	4,681
Differential white cell count	4,755	3,475
Eosinophil count	1	8
Platelet count	259	419
Examination of blood film	7,151	7,529
Malaria	8	11

Statistical Summary of Specimens Received and Examinations Completed—*continued*

1st January, 1971–31st December, 1971

	1970	1971
Blood sedimentation rate (E.S.R.)	2,919	2,499
L.E. cells	214	216
Prothrombin time	768	745
Examination of blood film for lead	2	1
Group and Rh factor	641	589
Cross-matching	2,727	4,805
Bone marrow examination	228	249
Bleeding and clotting times	23	1
Investigation of haemostatic defects	36	33
Serum vitamin B_{12}	1,521	1,528
Serum folic acid	722	729
Intrinsic factor assay	5	1
Blood volume (radioisotope tracer method)	6	4
Red cell survival (radioisotope tracer method)	5	2
Schilling test (radioisotope tracer method)	13	29
Coomb's test	996	1,424
Red cell fragility	7	1
Paul-Bunnell reaction	246	188
Haemoglobin electrophoresis	363	404
Intrinsic factor antibodies	21	56
Histochemistry	12	2
Miscellaneous	78	59
Foetal haemoglobin	324	389
Folate absorption	9	..
Red cell folate	78	71
Histidine load	..	..
	43,323	45,640

Venereal Disease Serology

Examinations completed—		
Quantitative Wasserman Reaction	2,699	2,971
Wassermann reaction	47,653	49,094
Reiter protein complement fixation test	48,122	49,584
V.D.R.L. test	50,235	52,809
Hydatid complement fixation test	336	368
Gonococcal complement fixation test	5,985	7,095
L.G.V. complement fixation test	69	90
Treponema pallidum immobilization test	4,189	6,489
Fluorescent treponemal antibody test	3,922	4,495
	163,210	172,995

Exfoliative Cytology

Number of specimens received—		
Gynaecological	202,003	218,312
General	1,697	1,906
	203,700	220,218
Number of smears examined—		
Gynaecological	202,003	218,312
General	7,538	7,988
	209,541	226,300

Bacteriology

Number of specimens	21,831	25,603
Examinations completed—		
Antibiotic sensitivity tests	12,200	14,345
Blood culture	475	506
Cerebrospinal fluid cell count	192	236
Cerebrospinal fluid culture	50	71

Statistical Summary of Specimens Received and Examinations Completed—*continued*

1st January, 1971–31st December, 1971

	1970	1971
Dark-ground preparation, spirochaetes	1	1
Escherichia coli, serotype identification	43	24
Faeces, microscopic examination	114	183
Faeces, culture	258	503
Guinea pig inoculation, *M. tuberculosis* (other than milk)	738	762
Haemolytic streptococci, Lancefield grouping	253	192
Milk, guinea pig inoculation	13	42
Nasal smears, mycobacterium leprae	8	16
Nasal swabs, culture	..	..
Serotyping—salmonella and shigella	127	203
Pus, Gram's stain	634	606
Pus, culture	631	608
Culture—identification	381	453
Skin, hair and nail, direct examination	377	352
Skin, hair and nail, culture for fungi	999	515
Sensitivity tests, *M. tuberculosis*	5,457	4,692
Sputum, Gram's stain	1,117	1,211
Sputum, culture	1,119	1,206
Sputum, Ziehl-Nielsen stain	4,894	3,725
Sputum, culture	4,894	3,724
Urethral swab culture (male)	454	312
Urethral swab culture	1,688	5,032
Cervical swab culture	2,262	5,068
Throat swab culture	474	1,196
Urethral smears, Gram's stain	1,397	1,624
Cervical smears, Gram's stain	1,226	1,534
Urine, chemical examination	3,737	4,324
Urine, microscopic examination	3,737	4,324
Urine, Gram's stain	1,874	21
Urine, culture	3,641	4,301
Vaccines	10	9
Gonococcal sensitivity test (penicillin incorporation)	192	325
Vaginal discharge, *Trichomonads*	74	507
Brucella agglutination test	832	794
Brucella complement fixation test	825	775
Rose-Waaler test	344	340
Weil-Felix reaction	140	139
Widal reaction	261	273
Anti-streptolysin "O" titre	1,188	877
Casoni test	1	1
Mantoux test	221	113
Latex screening test	735	604
Haemagglutination test for toxoplasmosis	2,020	2,639
C.F.T. for toxoplasmosis	2,029	2,716
Mycoplasma isolation	133	37
Mycobacterial identification	597	612
Specimens for fungal examination other than skin, hair and nails	12	113
Immunizations	158	43
Histoplasmosis ppty test	8	24
Coccidioidin pptw test	1	2
Miscellaneous bacteriology	461	763
Serotyping of streptococcus pyogenes	..	75
	65,707	73,693

Biochemistry

Number of specimens	30,034	28,398
Examinations completed—		
C.S.F. for—		
Chloride	177	218
Globulin	25	55
Glucose	195	220
Protein	191	231
Colloidal mastic	3	..
Blood and serum for—		
Acid phosphatase	358	437
Alkaline phosphatase	2,607	2,853

Statistical Summary of Specimens Received and Examinations Completed—*continued*

1st January, 1971–31st December, 1971

	1970	1971
Amylase	201	243
Bilirubin	2,517	2,678
Bromide	133	110
Calcium	1,346	1,620
Cholesterol	1,977	3,054
Creatinine and creatine	1,481	1,503
Electrolytes, sodium, potassium, chlorides, CO_2	11,361	11,294
Glucose	2,248	2,835
Iron, total and binding capacity	3,145	3,517
Lipids	1,597	2,925
Enzymes	3,727	3,035
Methaemoglobin	24	32
Phosphate (inorganic)	673	1,176
Magnesium	37	70
Proteins—total	5,460	5,984
Proteins—albumin	762	1,384
Proteins—globulin	751	1,311
Proteins—electrophoresis	4,357	4,649
Protein-bound iodine	9,098	6,221
Urea	4,738	4,934
Uric acid	1,551	1,673
Calculi	165	134
Immunoglobulins (I.E.P.)	4,256	5,148
Lipid electrophoresis	697	1,644
Faeces for—		
Fats	305	516
Occult blood	48	116
Porphyrins	28	54
Urine for—		
Protein	84	188
Bilirubin, porpobilinogen, urobilinogen	252	240
Porphyrins	202	224
Catecholamines	974	1,310
17-oxosteroids/oxogenic steroids	2,322	2,096
5-hydroxy indoles	69	99
Urea	31	132
Sugar	482	335
Miscellaneous chemical examinations	1,008	605
	71,663	77,103

THE INSTITUTE OF CLINICAL PATHOLOGY AND MEDICAL RESEARCH

ADDRESSES TO LEARNED SOCIETIES AND PUBLIC BODIES BY STAFF MEMBERS DURING 1971

"Laboratory Diagnosis of Cancer." H. Kramer. Delivered at Cancer Symposium arranged by the Post-graduate Committee in Medicine, University of Sydney, May, 1971.

"Cancer 1971—How well do we know it?" E. S. Finckh. Delivered at Seminar, Radiotherapy Institute, Prince of Wales Hospital, Randwick, April, 1971.

"Cancer 1971—Should we call on the cell biologist?" E. S. Finckh. Delivered at Seminar, Radiotherapy Institute, Prince of Wales Hospital, Randwick, April, 1971.

"The Papillomatous keratosis—The nature of differential diagnosis of Stucco Keratosis." E. Kocsard and J. J. Carter. Delivered at Annual Meeting of The Australian College of Dermatologists, April, 1971.

"Haemophilia and its Management Abroad." B. J. Arnold. Delivered to the Haemophilia Society of N.S.W., June, 1971.

"Vitamin B_{12} Deficiency in N.S.W." B. J. Arnold. Delivered at Symposium on Clinical and Basic Haematology, Sydney Hospital, May, 1971.

"Microbiological Assays." B. J. Arnold. Delivered at Symposium on Biochemical Aspects of Haematology, Australian Association of Clinical Biochemists, July, 1971.

"Blast Cell Leukaemia in the Elderly." B. J. Arnold. Delivered to Gerontology Society of Australia, August, 1971.

"Gastric Cytology." L. C. Mulhearn. Delivered to Course in Upper Gastrointestinal Cancer arranged by the Post-graduate Committee in Medicine, The University of Sydney, Royal North Shore Hospital, September, 1971.

"Results of Screening Promiscuous Teenagers by Cervical Smears." T. J. Ryan. Paper read at 4th International Congress of Cytology, London, May, 1971.

"Evaluation of Screening Tests for Syphilis." M. F. Garner. Delivered at Technicon Symposium, Sydney, February, 1971.

"The IgM FTA Test for Syphilis." M. F. Garner. Delivered at Australian Society for Microbiology, June, 1971.

"The VDRL Test." M. F. Garner and J. L. Backhouse. Delivered at Workshop, The Royal College of Pathologists of Australia, 16th Annual Meeting, Sydney, September, 1971.

"Fatal Influenza." E. S. Finckh. Delivered at Annual Meeting of The Royal College of Pathologists of Australia, Sydney, September, 1971.

"Aspects of Tissue Homeostasis." E. S. Finckh. Delivered at Seminar at University of Otago, New Zealand, November, 1971.

"Laboratory Diagnosis of Para-Proteinaemia." W. Jones. Delivered to Australian Institute of Medical Laboratory Technologists, Macquarie University, Sydney, August, 1971.

"Viral Complement Fixation Tests." A. M. Murphy. Delivered at Workshop, The Royal College of Pathologists of Australia, 16th Annual Meeting, Sydney, September, 1971.

"Recent Advances in the Diagnosis of Viral Diseases." A. M. Murphy and P. R. Field. Delivered at Resident Training Programme, Lidcombe Hospital, November, 1971.

"The Laboratory Diagnosis of Virus Diseases." A. M. Murphy. Delivered to Staff, Royal Prince Alfred Hospital, May, 1971.

"Clinical Use of Viral Studies—A look at the Laboratory." P. R. Field. Delivered at Resident Training Programme, Lidcombe Hospital, November, 1971.

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PUBLICATIONS BY STAFF MEMBERS

"The Papillomatous keratosis—The nature of differential diagnosis of Stucco Keratosis." E. Kocsard and J. J. Carter; The *Aust. J. of Dem.*, Vol. XII, No. 2, August, 1971.

"Incidence of Positive Coomb's Test LE Cells and Anti-Nuclear Factor in Patients on Alpha-Methyl DOPA Therapy." E. Hunter, E. Raik, S. Gordon, and K. B. Taylor; *Med. J. Aust.*, 1971, **2:** 810 (Oct. 16).

"The Millionth Smear: Past, Present and Future." T. J. Ryan; Bulletin of the Post-Graduate Committee in Medicine, University of Sydney, Vol. 27, No. 1, page 2, April, 1971.

"Testing of Blood Donors for Syphilis." M. F. Garner and J. L. Backhouse; *Med. J. Aust.*, 1971, **1:** 1374–1376.

"Evaluation of Screening Tests for Syphilis." M. F. Garner; Advances in Automated Analysis, 1971.

"Fluorescent Treponemal Antibody Tests on Cerebrospinal Fluid." M. F. Garner and J. L. Backhouse; *Brit. J. Vener. Dis.*, 1971, **47:** 356–358.

"The Prevalence of Yaws on Kar Kar Island, New Guinea." M. F. Garner, R. W. Hornabrook, and J. L. Backhouse; WHO/VDT/**71:** 374, 1971.

"Rubella Vaccination Trial." Forrest, Menser, Slinn, Nowak, Murphy, and Stout; *Med. J. Aust.*, **2,** 470 (August, 1971).

"Single-sample Diagnosis of Recent Rubella by Fractionation of Antibody on Sephadex G-200 Column." Gupta, Peterson, Stout, and Murphy; *J. Clin. Path.*, **24,** 547 (September, 1971).

"Heterotopia and ectopia of gastric epithelium produced by mucosal wounding in the rat." J. Wong and E. S. Finckh; *Gastroenterology*, 1971, **60:** 279.